Draft Environmental Assessment
State Route 303L (Interstate 10 to US 60)

Maricopa County, Arizona

NH-303-A(AFY)

303 MA 003 H5621 01L

Arizona Department of Transportation

Intermodal Transportation Division

Environmental Planning Group

1611 West Jackson Street, Mail Drop EM02

Phoenix, Arizona 85007

September 2008

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Approved by: Thor Anderson Date: 9-29-08

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Arizona Department of Transportation

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Robert E. Hollis, Division Administrator
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United States Department of Transportation

This draft environmental assessment has been prepared in accordance with provisions and requirements of Title 23 Code of Federal Regulations Part 771, relating to the implementation of the National Environmental Policy Act of 1969.

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Mitigation Measures

The following list describes measures that would be implemented as part of the proposed project to avoid, minimize, or otherwise mitigate environmental impacts associated with the project. The following mitigation measures and commitments are not subject to change without prior written approval from the Federal Highway Administration.

Arizona Department of Transportation Design Responsibilities

1. The Arizona Department of Transportation would coordinate with irrigation districts in the Study Area to address potential impacts on irrigation water conveyance infrastructure during the final design phase (refer to page 77).

2. Groundwater well impacts and acquisitions are handled by the Arizona Department of Transportation's Right-of-Way Group. If a well were affected by construction, well abandonment and compensation (drilling a new well) would be required. If a well were to be acquired, the water source would be replaced (refer to page 77).

3. During final design, the Arizona Department of Transportation would coordinate with the Flood Control District of Maricopa County Floodplain Manager. The proposed project would be designed to minimize floodplain encroachments and not impair flood-carrying capacity. The project would be designed such that construction would not constitute a hazardous or incompatible use, would not result in greater than a 1-foot rise in base flood elevations, and would not affect natural or beneficial floodplain values (refer to page 81).

4. The project would be subject to Section 402 of the Clean Water Act. The Arizona Department of Transportation Roadside Development Section would determine who would prepare the Stormwater Pollution Prevention Plan Index Sheet (refer to page 84).

5. Prior to construction, surveys for the Western burrowing owl would be conducted in accordance with the Arizona Game and Fish Department's *Burrowing Owl Project Clearance Guidance for Landowners* (2008) (refer to page 89).

6. Protected native plants within the construction limits would be affected by the project; therefore, the Arizona Department of Transportation would notify the Arizona Department of Agriculture at least 60 days prior to the start of construction so that the Arizona Department of Agriculture could determine the disposition of these plants (refer to page 89).

7. All disturbed soils that would not be landscaped or otherwise permanently stabilized by construction would be seeded using species native to the project vicinity. To prevent the introduction of invasive species seeds, all construction equipment would be washed at the

contractor's storage facility prior to entering the construction site. To prevent invasive species seeds from leaving the site, the contractor would inspect all construction equipment and remove all attached plant/vegetation debris prior to leaving the construction site (refer to page 89).

8. Landscaping treatment would be developed in coordination with the Arizona Department of Transportation Roadside Development Section and would incorporate native or low-water-use plants as identified by the Arizona Department of Water Resources. Landscaping would be consistent with conservation-oriented water uses in the Phoenix Active Management Area (refer to page 95).

9. To reduce lighting spillover into residential areas, shielded or cut-off lighting fixtures would be used along the freeway main line. The height of the masts would be minimized, within constraints of existing highway design standards and safety considerations (refer to page 95).

10. To minimize emissions from idling and slow-moving traffic in the construction zone, traffic control would be implemented in accordance with Part VI and the Arizona Supplement to Part VI of the *Manual on Uniform Traffic Control Devices for Streets and Highways*, 2003 edition, published by the Federal Highway Administration, including any revisions or additions and/or associated provisions in the project plans, as determined by the Arizona Department of Transportation's Traffic Design Section during final design. Disruption to traffic would be limited, especially during peak travel periods (refer to page 108).

11. Additional noise analyses would be conducted during the final design phase to determine the exact number, location, and height of noise barriers required to mitigate noise impacts in accordance with the Arizona Department of Transportation's *Noise Abatement Policy* (dated 2005) (refer to page 123).

12. During final design, the Arizona Department of Transportation project manager would contact the Arizona Department of Transportation Environmental Planning Group's hazardous materials coordinator at (602) 712-7767 to determine the need for additional site assessment. The project corridor would need to be reevaluated prior to right-of-way acquisition. A new initial site assessment, prepared in conformance with the most current version of the American Society for Testing and Materials standards (E-1527 series of standards), would be prepared (refer to page 128).

13. Any adverse impacts on sites eligible for or listed in the National Register of Historic Places as a result of the proposed project would require mitigation prior to project construction. Ideally, any sites located within the footprint of disturbance would be avoided. If avoidance were not possible, any negative impacts on the sites would be mitigated (refer to page 138 and the signed Programmatic Agreement in Appendix D).

14. During the final design phase, the Arizona Department of Transportation would communicate and coordinate with emergency services providers to minimize the potential for slower response times associated with construction (refer to page 153).

15. During the final design phase, the Arizona Department of Transportation would communicate and coordinate with Valley Metro to minimize the potential for bus service disruptions as a result of construction (refer to page 153).

16. A right-of-way acquisition program would be implemented by the Arizona Department of Transportation Right-of-Way Group in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646), the Uniform Relocation Act Amendments of 1987 (Public Law 100-17), and Title VI of the Civil Rights Act of 1964. Private property owners would be compensated at fair market value for land to be acquired for project right-of-way (refer to page 159).

17. Measures to minimize construction impacts would be incorporated into construction contract specifications. Traffic would be managed by detailed traffic control plans and by procedures and guidelines specified in Part VI and the Arizona Supplement to Part VI of the *Manual on Uniform Traffic Control Devices for Streets and Highways*, 2003 edition. Construction activities that substantially disrupt traffic would not be performed during peak travel periods. Requirements for the use of construction notices and bulletins would be identified as needed. Local agencies would be consulted regarding traffic restrictions in their respective jurisdictions to minimize disruptions to local traffic. The effectiveness of the traffic control measures would be monitored during construction, and any necessary adjustments would be made (refer to page 159).

18. The Arizona Department of Transportation Utility and Railroad Engineering Section would coordinate utility involvement (refer to page 177).

19. During final design, Burlington Northern Santa Fe Railroad would be afforded the opportunity to comment on design plans (refer to page 177).

Arizona Department of Transportation Phoenix Construction District Responsibilities

1. The Arizona Department of Transportation Phoenix Construction District Office would submit the Arizona Pollutant Discharge Elimination System Notice of Intent and Notice of Termination to the Arizona Department of Environmental Quality (refer to page 84).

2. District personnel, in association with the contractor, would complete the National Emissions Standard for Hazardous Air Pollutants documentation and submit it to the appropriate Arizona Department of Transportation office, as determined by the hazardous materials coordinator, for

review 5 working days prior to being submitted to the regulatory agencies (See Arizona Department of Transportation policy SAF-6.01, February 23, 2004) (refer to page 128).

Contractor Responsibilities

1. The contractor would submit the Arizona Pollutant Discharge Elimination System Notice of Intent and Notice of Termination to the Arizona Department of Environmental Quality (refer to page 84).

2. All disturbed soils that would not be landscaped or otherwise permanently stabilized by construction would be seeded using species native to the project vicinity. To prevent the introduction of invasive species seeds, all construction equipment would be washed at the contractor's storage facility prior to entering the construction site. To prevent invasive species seeds from leaving the construction site, the contractor would inspect all construction equipment and remove all attached plant/vegetation debris prior to allowing that equipment to leave the construction site (refer to page 89).

3. In accordance with Maricopa County Rule 310, "Fugitive Dust Sources," an earthmoving permit would be obtained and a fugitive dust control plan would be prepared and submitted to Maricopa County for each construction site (refer to page 108).

4. To minimize emissions from idling and slow-moving traffic in the construction zone, traffic control would be implemented in accordance with Part VI and the Arizona Supplement to Part VI of the *Manual on Uniform Traffic Control Devices for Streets and Highways*, 2003 edition, published by the Federal Highway Administration, including any revisions or additions and/or associated provisions in the project plans, as determined by the Arizona Department of Transportation's Traffic Design Section during final design. Disruption to traffic would be limited, especially during peak travel periods (refer to page 108).

5. The contractor, in association with the Arizona Department of Transportation Engineer, would file a National Emissions Standard for Hazardous Air Pollutants notification with the Arizona Department of Environmental Quality and/or any other appropriate delegated agency as noted on the National Emissions Standard for Hazardous Air Pollutants form for the project's county or as determined by the hazardous materials coordinator, at least 10 working days prior to the modification, demolition, or removal of regulated amounts of asbestos containing material associated with structures in the project area (refer to page 128).

6. If previously unidentified cultural resources were to be encountered during activity related to the construction of the project, the contractor would stop work immediately at that location and take all reasonable steps to secure the preservation of those resources. The Resident Engineer would contact the Arizona Department of Transportation's Historic Preservation Team at

(602) 712-7767 immediately and make arrangements for the proper treatment of those resources (refer to page 138).

7. The Arizona Department of Transportation and the contractor would keep bicycle and pedestrian facilities open during construction (refer to page 153).

8. Access to businesses and residences near the project would be maintained during construction (refer to page 159).

9. Traffic would be managed by detailed traffic control plans and by procedures and guidelines specified in Part VI and the Arizona Supplement to Part VI of the *Manual on Uniform Traffic Control Devices for Streets and Highways*, 2003 edition. Construction activities that substantially disrupt traffic would not be performed during peak travel periods. Requirements for the use of construction notices and bulletins would be identified as needed. Local agencies would be consulted regarding traffic restrictions in their respective jurisdictions to minimize disruptions to local traffic. The effectiveness of the traffic control measures would be monitored during construction, and any necessary adjustments would be made (refer to page 159).

List of Acronyms and Abbreviations

ADEQ	Arizona Department of Environmental Quality
ADES	Arizona Department of Economic Security
ADMP	area drainage master plan
ADOT	Arizona Department of Transportation
ADT	average daily traffic
ADWR	Arizona Department of Water Resources
AFB	air force base
AGFD	Arizona Game and Fish Department
AMA	active management area
APE	area of potential effects
APP	Aquifer Protection Permit
ASLD	Arizona State Land Department
ASM	Arizona State Museum
ASTM	American Society for Testing and Materials
AZ	Arizona
AZPDES	Arizona Pollutant Discharge Elimination System
BE	biological evaluation
BNSF	Burlington Northern Santa Fe Railroad
BRT	bus rapid transit
CAA	Clean Air Act
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
dBA	A-weighted decibel
DCR	design concept report
EA	environmental assessment
EIS	environmental impact statement
EPA	United States Environmental Protection Agency
ºF	degrees Fahrenheit

List of Acronyms and Abbreviations (*continued*)

FCDMC	Flood Control District of Maricopa County
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	finding of no significant impact
FPPA	Farmland Protection Policy Act
HOV	high-occupancy vehicle
I-10	Interstate 10
I-15	Interstate 15
I-17	Interstate 17
I-40	Interstate 40
IAC	Interagency Committee on Outdoor Recreation
ISA	initial site assessment
kV	kilovolt
L_{Aeq1h}	equivalent sound level for 1 hour
L_{eq}	equivalent sound level
LOS	level of service
LRTP	*Long-Range Transportation Plan* (MAG)
Luke AFB	Luke Air Force Base
LWCF	Land and Water Conservation Fund
LWCFA	Land and Water Conservation Fund Act
MAG	Maricopa Association of Governments
MC 85	Maricopa County Route 85
MCAQD	Maricopa County Air Quality Department
MCDOT	Maricopa County Department of Transportation
mg/L	milligrams per liter
MP	milepost
mph	miles per hour
MSAT	mobile source air toxic
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria

List of Acronyms and Abbreviations (*continued*)

NEPA	National Environmental Policy Act
NESHAP	National Emissions Standard for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
No.	number
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOT	Notice of Termination
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWP	nationwide permit
O_3	ozone
OAQPS	Office of Air Quality Planning and Standards
PA	programmatic agreement
PAD	planned area development
$PM_{2.5}$	fine particulate matter
PM_{10}	particulate matter
ppm	parts per million
RFS	Regional Freeway System
RID	Roosevelt Irrigation District
RTP	*Regional Transportation Plan* (MAG)
R/W	right-of-way
SFHA	special flood hazard area
SHPO	State Historic Preservation Office/Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPUI	single-point urban interchange
SR	State Route
SR 101L	State Route 101 Loop
SR 202L	State Route 202 Loop

List of Acronyms and Abbreviations (*continued*)

SR 303L	State Route 303 Loop
SWPPP	Stormwater Pollution Prevention Plan
TDM	transportation demand management
TNM	Traffic Noise Model
TSM	transportation system management
µg/m^3	micrograms per cubic meter
U.S.	United States
US 60	United States Route 60
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
VMT	vehicle miles traveled
vpd	vehicles per day
Waters	waters of the United States

Part 1. Introduction

A. Explanation of an Environmental Assessment

The National Environmental Policy Act of 1969 (NEPA) requires all federal agencies to assess potential impacts on the natural and man-made environments that may result from any federally funded project or program. An environmental assessment (EA) is an evaluation of natural and man-made conditions that exist within an area and could be affected by a federally funded project.

This Draft EA pertains to proposed improvements to State Route 303 Loop (SR 303L), in Maricopa County, Arizona. This document has been prepared in compliance with NEPA, other environmental laws, and the policies of the Federal Highway Administration (FHWA), which is the lead federal agency. As the agency with statewide jurisdiction, the Arizona Department of Transportation (ADOT) has prepared this document, with FHWA furnishing guidance and final approval.

This document has been prepared in accordance with provisions and requirements of Title 23 of the Code of Federal Regulations (C.F.R.) Parts 771 and 774, relating to the implementation of NEPA.

The EA process provides opportunities for input from local, state, and federal agencies and tribes on the proposed improvements. Public involvement is another integral part of the EA process, with input gathered through public scoping meetings, public information meetings, and public hearings (see Part 5, *Public Involvement and Project Coordination,* on page 192).

This Draft EA will help guide the decision-making process for the proposed improvements to SR 303L by assisting FHWA and ADOT in examining and considering the improvements' potential social, economic, and environmental impacts. An EA is conducted to decide whether to prepare a finding of no significant impact (FONSI) or to undertake the preparation of an environmental impact statement (EIS).

A study, known as a Section 4(f) evaluation, for the proposed improvements is also included in this document in Part 4, *Affected Environment and Environmental Consequences,* on page 163. Required by the Department of Transportation Act of 1966, as amended, the Section 4(f) evaluation documents whether the proposed improvements would use land from a significant publicly owned park, recreation area, wildlife or waterfowl refuge, or significant historic site.

Part 7, *Glossary*, on page 207, contains definitions for terms used throughout this Draft EA.

B. Project Location

SR 303L is on the west side of the Phoenix metropolitan area, approximately 20 miles west of downtown Phoenix (Figure 1-1, on page 3). The Study Area for the proposed improvements generally extends 0.5 mile on each side of the existing SR 303L.

The Study Area begins at Van Buren Street, south of Interstate 10 (I-10), and extends north of US 60 to approximately milepost (MP) 21.0. The overall length of the Study Area is approximately 18 miles. Figure 1-2, on page 4, shows the Study Area and the mileposts along the existing SR 303L alignment.

C. Existing Conditions

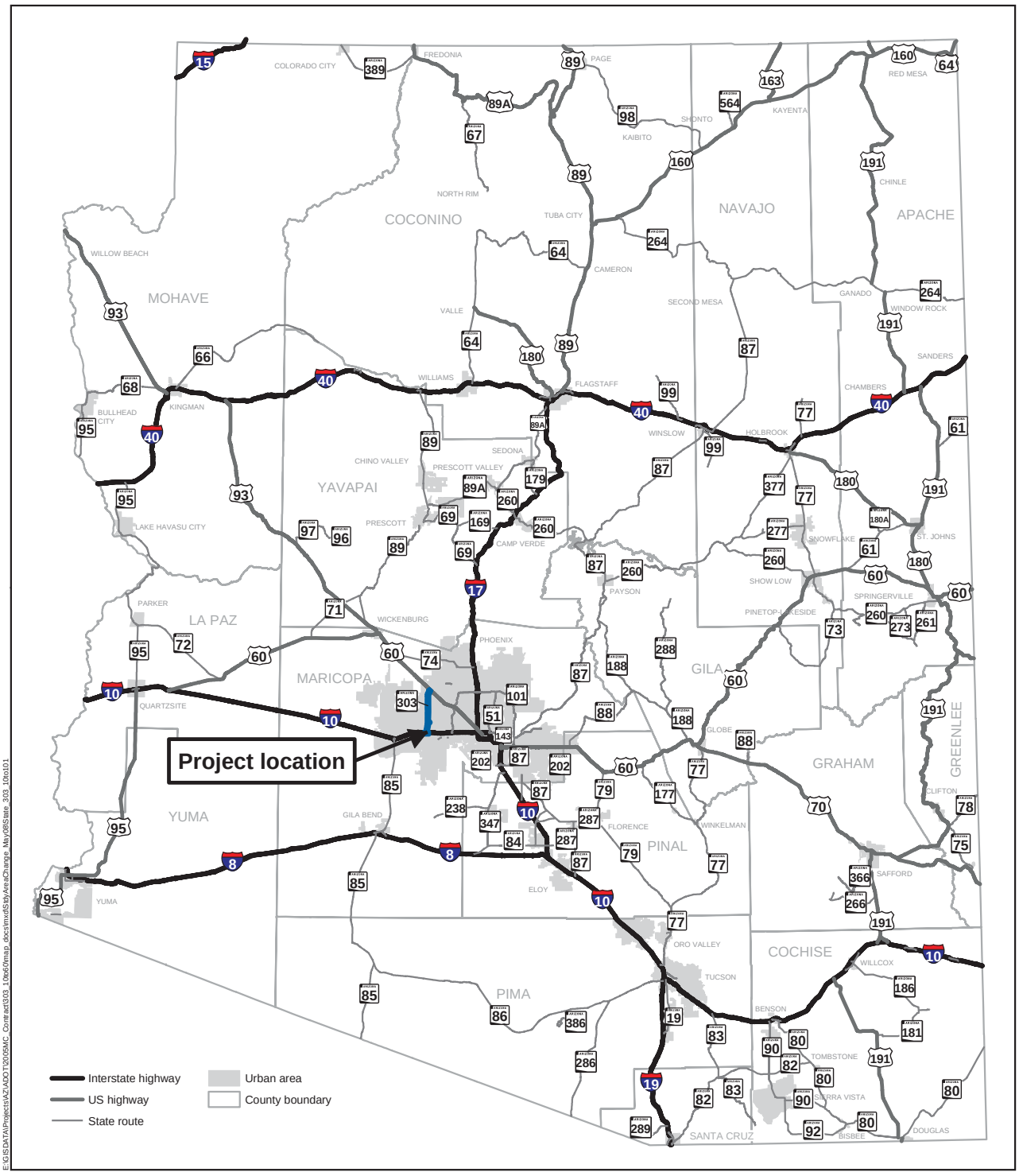
The Study Area traverses unincorporated areas of Maricopa County and the municipalities of Goodyear, Glendale, and Surprise. The Study Area is generally rural and agricultural, transitioning to suburban land uses at the southern and northern ends of the corridor. At the southern end, between I-10 and Indian School Road (MP 6.0), the area is being converted to master-planned communities like Pebble Creek and Canyon Trails Ranch within Goodyear. At the northern end of the corridor, between Cactus Road (MP 13.0) and US 60, land use is transitioning to large-scale communities like Sun City Grand, Sun City West, Bell West Ranch, Northwest Ranch, Surprise Farms, and Sierra Montana.

The central portion of the Study Area, between Indian School and Cactus roads, is predominantly agricultural or rural subdivisions of 1-acre-plus lots. Luke Air Force Base (AFB), covering approximately 1,700 acres, is just east of the Study Area and is generally bounded by Bethany Home Road (MP 8.0) on the south, Northern Avenue on the north (MP 10.0), Sarival Avenue on the west, and Litchfield Road on the east. The base both influences and restricts surrounding land uses.

Within the Study Area, SR 303L consists of a rural, two- to four-lane highway with at-grade arterial street crossings at every mile, with the exception of the intersections at Clearview Boulevard (MP 17.7) and Mountain View Boulevard (MP 18.1), each of which has grade separations but without on- and off-ramps.

From I-10 to just south of Indian School Road, SR 303L is a four-lane divided roadway. From just south of Indian School Road to Clearview Boulevard, the roadway consists of one 12-foot-wide travel lane in each direction, with turning lanes at Northern Avenue, Olive Avenue (MP 11.0), Waddell Road (MP 14.2), Greenway Road (MP 15.2), and Bell Road (MP 16.2). From Clearview Boulevard north to US 60, SR 303L is a four-lane divided roadway.

Figure 1-1. Location of project in state



E:\GIS\DATA\Projects\AZ\ADOT\20050MC_Contract\303_10to60\map_docs\mxd\StdyAreaChange_May08\State_303_10to101

NORTH

0 5 10 20 30 miles

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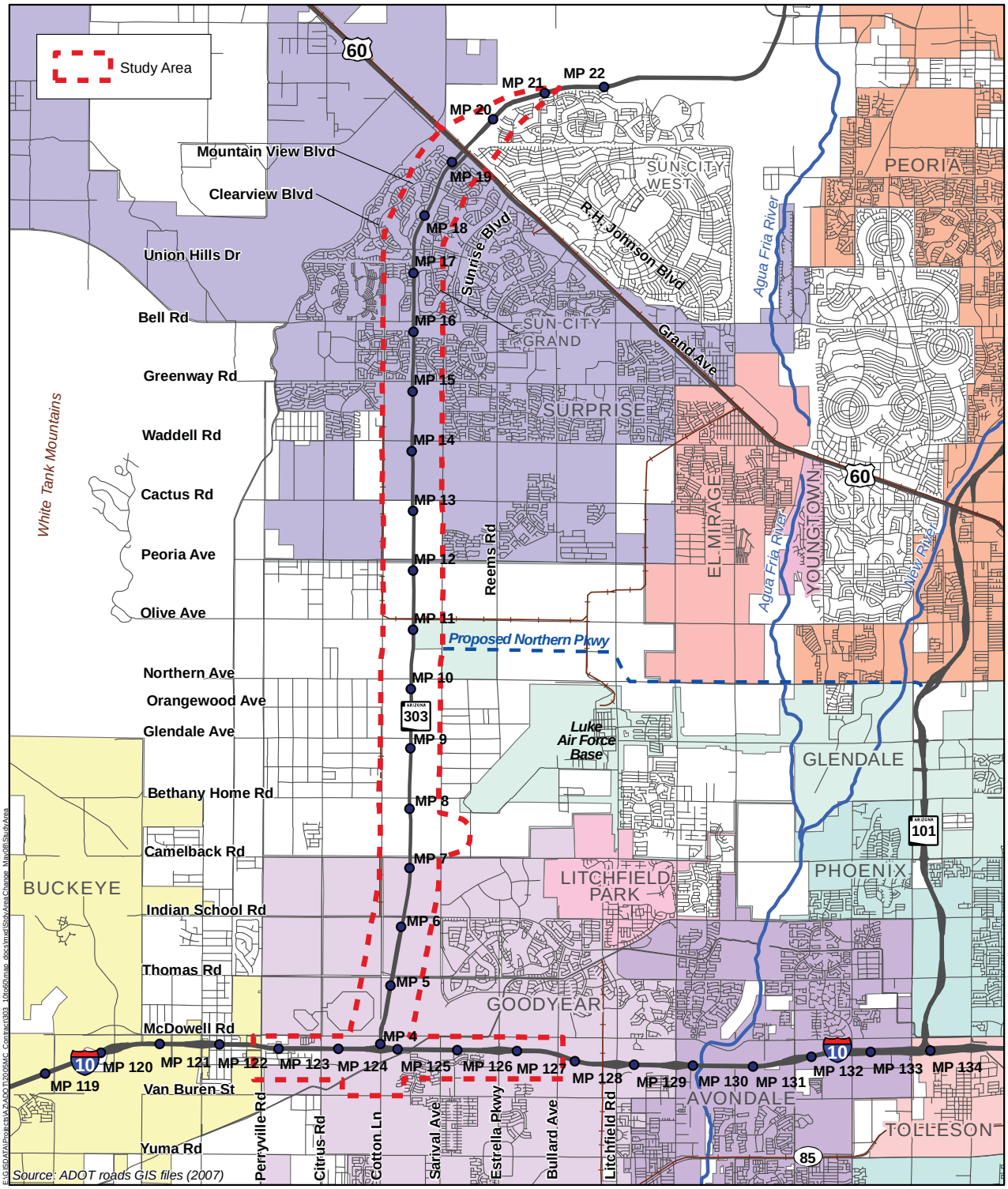
Figure 1-2. Study Area



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D. Project Background and Overview

In the *West Area Transportation Analysis* (1984), the Maricopa Association of Governments (MAG) first identified the long-term need for a highway that would extend from Maricopa County Route 85 (MC 85) to Interstate 17 (I-17).

The general corridor for this highway was referred to as the Cotton Lane/Northwest Loop. It was included in the MAG *Long-Range Transportation Plan* (LRTP) in 1985, and added to the State Highway System as State Route (SR) 517. The corridor was renamed the Estrella Corridor in 1986. The proposed freeway was expected to be constructed in the 20-year period after 1985, when voters approved Proposition 300—the implementation of a half-cent sales tax over the next 20 years to fund transportation improvements throughout the county. In 1987, the State Transportation Board renamed the Estrella Corridor as SR 303L.

In 1987, the *Estrella Freeway Draft Reconnaissance Report* was completed by ADOT as a component of a route location study and preliminary design. No substantive environmental issues were raised by the study. At the time, the area was sparsely populated, relatively slow growth was projected, minimal natural habitat or vegetation was present, and limited evidence of cultural resources sites had been discovered.

In 1991, ADOT completed location studies and a state-level EA for the entire SR 303L corridor, from MC 85 to I-17 (ADOT 1991). The EA included a substantial public involvement component, including public information meetings, newsletters, press releases, and two public hearings (attended by over 300 citizens). Again, no substantive environmental issues were identified.

Because of funding considerations, SR 303L was removed from the LRTP in 1994. A few years later, the Maricopa County Department of Transportation (MCDOT) initiated a series of studies to revive the project development process, including a design concept report (DCR) for the stretch of highway proposed from Indian School Road to Clearview Boulevard and an EA for the stretch from I-10 to US 60.

In 2000, an EA update (*State Route 303L Interim Roadway Project*) was conducted by MCDOT to provide baseline environmental conditions and address environmental effects associated with increased SR 303L capacity needs relative to the development of Sun City Grand. Sun City Grand is a master-planned community for up to 10,000 residents between the Union Hills section line (MP 17.0) and US 60, straddling the SR 303L corridor. As a result of this study, MCDOT agreed to assist in the funding and construction of overpasses at Clearview Boulevard and Mountain View

Boulevard, to shift the alignment slightly west away from existing homes, and to partially depress the roadway profile between Clearview and Mountain View boulevards. These mitigation measures substantially reduced the potential for noise impacts on surrounding residential areas. The project resulting from this EA update was constructed and opened to traffic in September 2002. The bridge over US 60 was constructed and opened to traffic in May 2004.

In 2006, ADOT and MCDOT developed an intergovernmental agreement to transfer to ADOT the responsibility for construction, operation, and maintenance of SR 303L as a fully access-controlled freeway facility.

Figure 1-3, on page 7, recounts the major decisions and events leading to the current SR 303L configuration and to its proposed improvements.

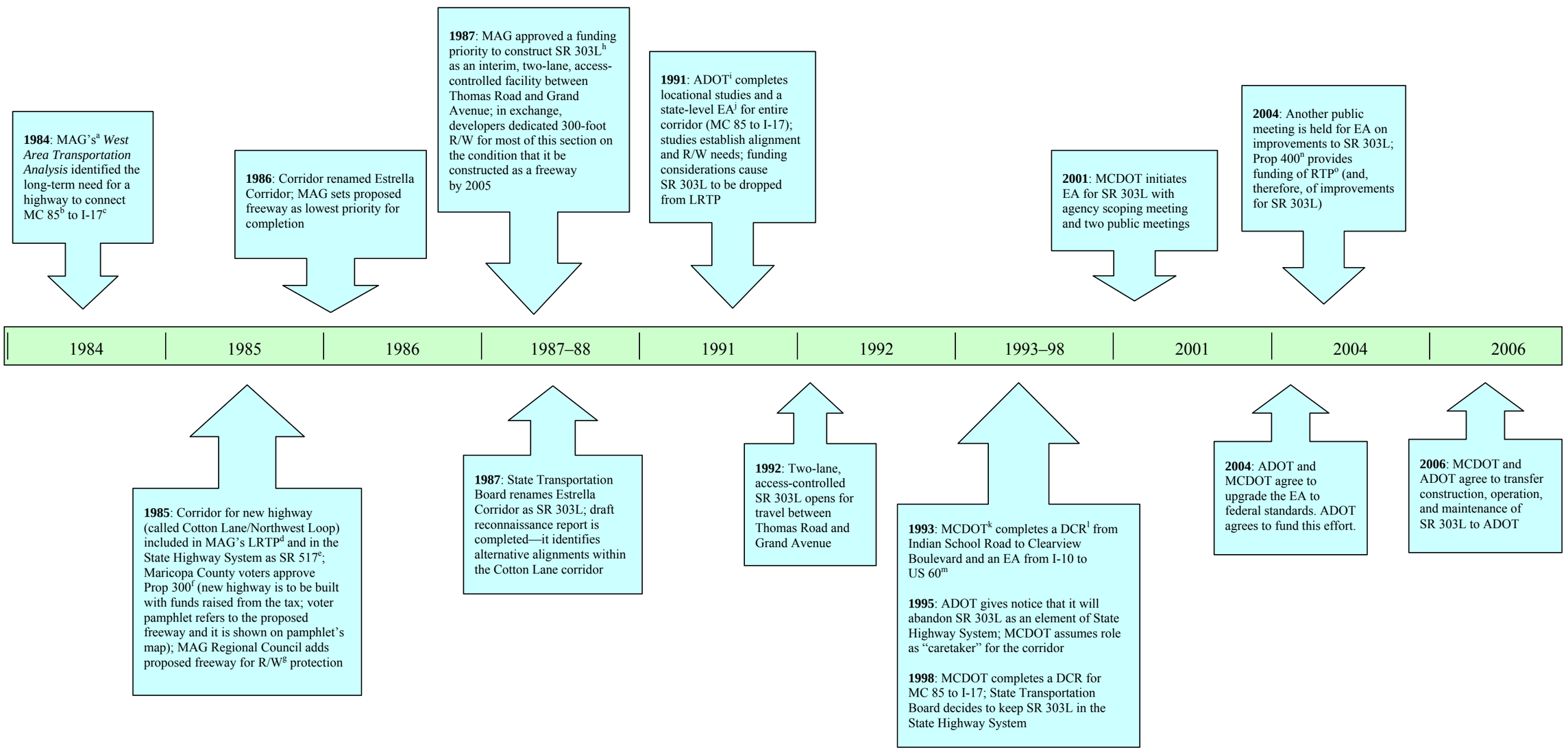
1. Proposed Improvements

The proposed SR 303L project is part of MAG's current (2003) *Regional Transportation Plan* (RTP). This plan was approved by county voters in 2004 (as Proposition 400, a renewal of the 20-year, half-cent sales tax for transportation purposes). In the RTP, SR 303L is planned as a multilane freeway from the proposed SR 801, which would be south of I-10, to I-17.

This proposed improvement project is an important link in this planned regional freeway system. Proposed upgrades include:

- widening SR 303L
- implementing various drainage improvements
- building system traffic interchanges to connect SR 303L with I-10 and the proposed Northern Parkway (a system traffic interchange connects two or more freeway facilities and allows for uninterrupted traffic flow as motorists move from one facility to another)
- building 15 service traffic interchanges at intersections with Study Area arterial streets, including US 60 (a service traffic interchange connects a freeway facility and a cross street—it typically features traffic signals to regulate traffic flow)
- accommodating a mid-mile alignment shift of Northern Avenue to the north (a separate environmental document is being prepared for this project)

Figure 1-3. Project history



[a] Maricopa Association of Governments
[b] Maricopa County Route 85
[c] Interstate 17
[d] *Long-Range Transportation Plan*
[e] State Route 517
[f] 1985 ballot issue to fund facilities in MAG's *Long-Range Transportation Plan*
[g] right-of-way
[h] State Route Loop 303
[i] Arizona Department of Transportation
[j] *Environmental Assessment*
[k] Maricopa County Department of Transportation
[l] *Design Concept Report*
[m] United States Route 60
[n] 2004 ballot issue to fund facilities in MAG's *Regional Transportation Plan*
[o] *Regional Transportation Plan* (MAG 2003)

The programmed MAG RTP funding provides for improvements to SR 303L that would result in an urban freeway with three general purpose lanes in each direction after the initial construction phase. The freeway would be fully access-controlled, which means that it would pass under or over cross streets, allowing for uninterrupted traffic flow. The high-occupancy vehicle (HOV) lanes on I-10 at the connection with SR 303L would be accommodated. At ultimate build-out, the freeway would have four general purpose lanes and one HOV lane in each direction. These ultimate configuration improvements are not currently funded or programmed in the MAG RTP.

Lanes functioning as outside lanes at the end of initial construction would remain the outside lanes at ultimate build-out. To achieve ultimate build-out, lanes would be added to the inside, i.e., on land in the median. Auxiliary lanes are planned between each service traffic interchange and leading into and away from the two planned system traffic interchanges. The improved freeway would have a rolling profile where, in most cases, it would be elevated over existing cross streets and return to near ground level between cross streets.

2. No-Build Alternative

The No-Build Alternative, which would consist of not constructing improvements to SR 303L, is also considered in this document.

E. General Project Schedule and Funding

While construction of the proposed SR 303L improvements would not begin until 2011, ADOT has programmed the proposed improvements for the initial phase into its current *Five-Year Transportation Facilities Construction Program, 2009–2013* (Table 1-1, on this page).

Table 1-1. Funding schedule for proposed improvements to SR 303L, I-10 to US 60

Activity	FY[a] 2009	FY 2010	FY 2011	FY 2012	FY 2013	Summary
R/W[b] preservation	—	—	$10.0	$10.0	$10.0	$30.0
Design	$13.8[c]	$11.3	8.5	20.0	—	53.6
R/W acquisition	10.0	10.0	—	70.0	—	90.0
Construction	—	—	250.0	205.0	155.0	610.0
Total	$23.8	$21.3	$268.5	$305.0	$165.0	$783.6

Source: Arizona Department of Transportation (2008)
[a] fiscal year [b] right-of-way [c] all values in millions of 2008 dollars

Additional funding for this project in the amount of $327 million has been included in the MAG RTP for future years, but has not been programmed by ADOT.

Part 2. Project Purpose and Need

Improvements to the transportation system in the SR 303L Study Area are needed to:

- accommodate existing and projected local, regional, and interstate travel demand, including truck traffic
- provide acceptable traffic performance
- conform to local and regional development and transportation plans

The purpose of the proposed project is to improve the existing SR 303L transportation facility from I-10 to US 60 and meet the above-described needs through:

- provision of an improved connection to the US 60/US 93 corridor between Phoenix and Las Vegas, Nevada
- completion of an important link in the MAG Regional Freeway System (RFS) that accommodates regional growth and provides improved traffic conditions for local and regional traffic
- integration of the existing facility into a consolidated local drainage system
- provision of a transportation facility that responds to local and regional development and transportation plans

A. Need for the Proposed Project

1. Connection of West Phoenix Metropolitan Area to Northwest Arizona and Nevada

To achieve and maintain acceptable traffic conditions on US 60 in coming years, ADOT has limited choices. In terms of physical changes, ADOT has few options for upgrading US 60 from southeast of the SR 303L intersection to the State Route 101 Loop (SR 101L) interchange. Addressing increasing traffic congestion along this stretch of US 60 is largely confined to facing the issue from the demand side: diverting long distance, through-traffic to another route. One purpose of the proposed SR 303L project is to create a primary diversion route for US 60 through-traffic.

US 60, at the northern end of the SR 303L Study Area, serves as a continuation of US 93, which links Phoenix to Interstate 40 (I-40) east of Kingman and to Interstate 15 (I-15) in Las Vegas. However, west of I-17, no continuous major transportation facility links I-10 and US 60 to serve the public's transportation needs to enter and leave the northwestern Phoenix metropolitan area. Currently, the Arizona portion of US 93 is being upgraded to a four-lane divided highway, and a bypass of Wickenburg is also planned. This upgrading of US 93 reflects the increasing importance of this route as a carrier of intercity and interstate traffic.

With the proposed improvements, SR 303L would efficiently connect I-10 in the west Phoenix metropolitan area with the US 60/US 93 corridor. At present, the efficiency of the existing SR 303L is deteriorating. Currently, the traveling public has four primary ways to enter the Phoenix metropolitan area from US 93, northwest of the Study Area:

1. US 60 to SR 101L
2. SR 74 to I-17
3. US 60 to the existing SR 303L
4. US 60 to I-17 at Thomas Road

As will be shown in the following discussion, US 60 is overburdened southeast of the SR 303L intersection. It was not designed to handle heavy volumes of interstate and regional traffic. The proposed SR 303L improvements are the most promising and viable way to relieve traffic congestion on US 60.

Figure 2-1, on page 13, shows the SR 303L Study Area in relation to other regional highways. It also shows the study areas for other proposed improvements to SR 303L and the study areas for the proposed SR 801 freeway between SR 85 and State Route 202 Loop (SR 202L).

The US 60 corridor southeast of the existing SR 303L connection is becoming increasingly urban. This portion of US 60 does not have operational characteristics consistent with being considered part of the RFS (i.e., freeways identified in the RTP) because 19 traffic signals have been installed in the 11-mile distance between SR 303L and SR 101L (one signal every 0.6 mile). Because of the diagonal orientation of US 60, good signal progression and smooth-flowing traffic have proved difficult to achieve. With planned improvements, this portion of US 60 would be an "enhanced arterial/limited expressway," with six lanes in each direction and most, if not all, of the traffic signals remaining.

SR 74 runs east–west between US 60 and I-17 on the northern edge of the Phoenix metropolitan area. It does provide a free-flow, two-lane rural highway linking US 60 to I-17. This route is and will continue to be used by some motorists headed for the northern, central, or eastern parts of the metropolitan area. However, this route is fairly distant from the Study Area and does not serve the majority of the truck traffic on US 60.

Thus, while US 60 and SR 74 offer routes connecting highways in northwestern Arizona with the Phoenix metropolitan area, neither offers as efficient and direct a connection with I-10 in the west Phoenix metropolitan area as would SR 303L with the proposed improvements.

Truck traffic is a special component of US 60 long-distance travel. A roadside interview survey with truckers was conducted by MAG on major highways serving the Phoenix area (MAG 2001). The survey found that the combined routes of US 60 and US 93 west and north of Wickenburg served 1,809 trucks per day, accounting for 23 percent of the total vehicles on those highways. For comparison, on I-10, which is a true Interstate Highway and carries more interstate freight, the share is around 35 percent. Of the trucks discussed in the MAG 2001 study, 65 percent were passing through the Phoenix area and 35 percent were headed for destinations within the metropolitan area. In the urban area, the primary destination was the I-10 corridor west of I-17, where warehousing and intermodal facilities are located. The primary destination for through-trucks was I-10 east toward Tucson and New Mexico.

Traffic classification counts completed in 2001 by MCDOT on US 60 near SR 303L and on SR 303L indicated that approximately 30 percent of the truck traffic entering the urban area on US 60 used SR 303L. At that time, truck traffic on SR 303L amounted to approximately 24 percent of all vehicles using that route. Therefore, the existing SR 303L is serving as a truck diversion route for US 60 because it provides a relatively free-flow route to I-10.

In 2004, MCDOT updated data on truck travel patterns in an origin-destination study specifically for SR 303L (see Table 2-1, on this page). This study indicated that trucks made up 15 percent of the existing traffic on SR 303L. These data further indicated that 38 percent of the trucks were passing through the metropolitan area, 25 percent were going to destinations within the metropolitan area, and 37 percent were local trips (those originating from and destined to a location along SR 303L). Truck traffic into the area is expected to continue to increase as the Phoenix metropolitan area and the state continue to develop, but through-truck trips are expected to become a smaller and smaller portion of the traffic stream as the Study Area becomes urbanized.

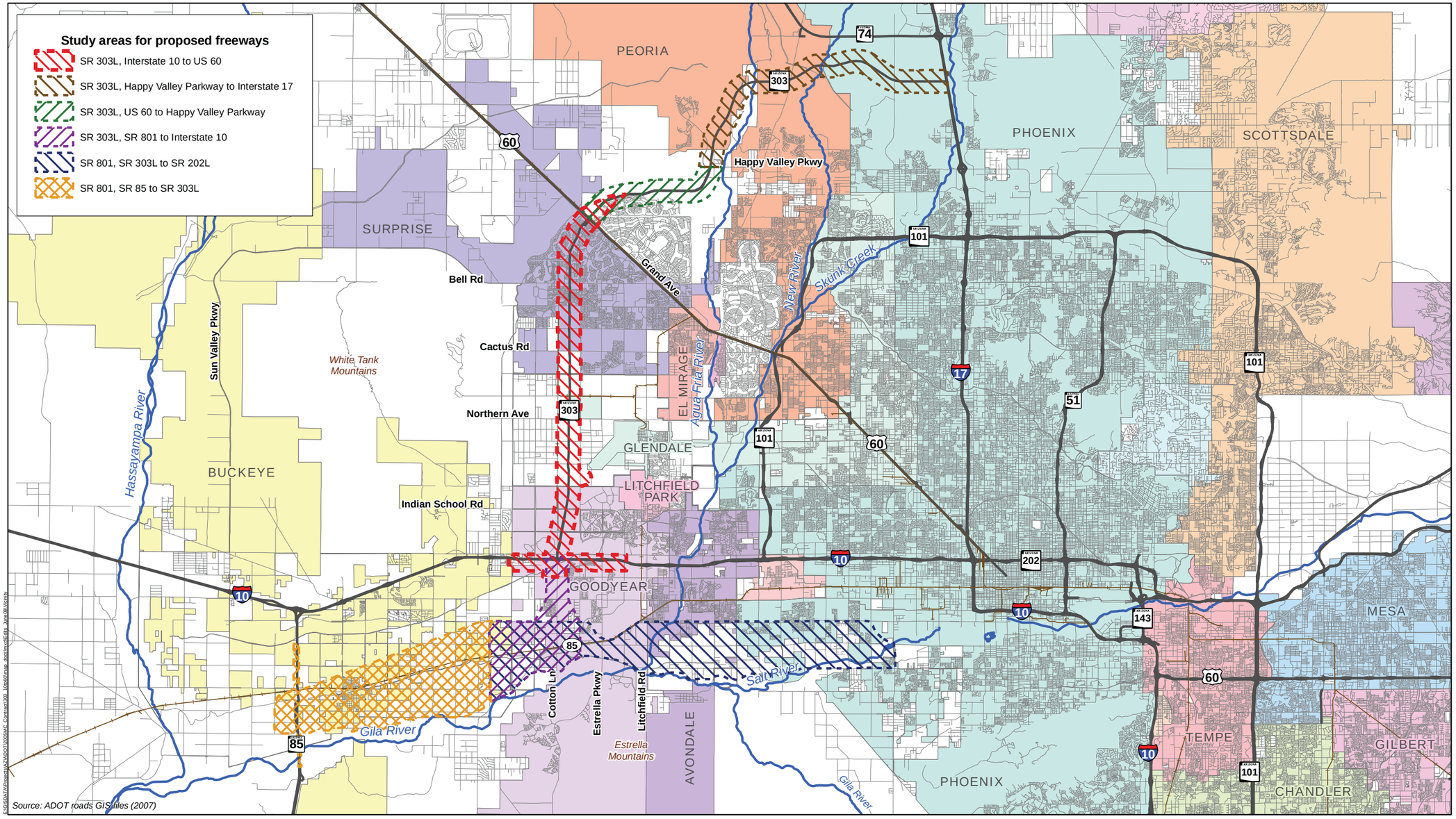
Table 2-1. Existing and future SR 303L truck volumes

Year	Average daily traffic	Truck trips per day				Trucks as a percentage of ADT[a,b]
		Local	Metropolitan area	Through	Total	
2003 (existing SR 303L)	9,800	544	368	559	1,471	15.0
2030 (no build)	27,000	2,198	735	1,117	4,050	15.0

[a] average daily traffic

[b] based on *Loop 303 Truck Origin-Destination Study*, 2004, Maricopa County Department of Transportation

Figure 2-1. Project vicinity



NORTH
0 1 2 3 miles

NH-303-A(AFY)
303 MA 003 H5621 01L
State Route 303L (Interstate 10 to US 60)

With no changes to the existing SR 303L roadway, traffic signals would eventually be needed at most, if not all, of the cross streets. With more traffic signals, fewer trucks would divert from US 60 to SR 303L and those nondiverted trucks would remain on US 60 and have to encounter 19 traffic signals before reaching SR 101L. Additional noise from trucks using this portion of US 60 could not be effectively mitigated because of the frequency of intersecting streets. Furthermore, this increased truck component would contribute to US 60 becoming more and more undesirable in terms of traffic performance and would also increase air quality impacts.

SR 74 provides a free-flow, two-lane rural highway linking US 60 to I-17. This route is and will continue to be used by some truck drivers headed for the northern, central, or eastern parts of the metropolitan area. SR 74, however, is not designed to accommodate heavy volumes of truck traffic.

US 60 to I-17 at Thomas Road offers truck drivers arriving from the northwest the ability to reach destinations near the Phoenix urban core. However, it involves considerable traffic congestion and numerous traffic signals. Driving time is substantially greater compared with using a freeway route. For some origins and designations, however, this is still an appropriate truck route.

While a major transportation facility is needed to accommodate regional growth in and near the Study Area (see next section), meeting the demand of regional and interstate truck traffic for efficient access to I-10 in the west Phoenix metropolitan area and reducing truck traffic volumes on US 60 southeast of the SR 303L intersection are also important needs.

2. Accommodation of Regional Growth and Linkage to Regional Freeways

With regional growth in population, employment, and housing comes regional mobility needs. Vehicle miles traveled are projected to outpace socioeconomic trends, as they typically have in Phoenix since the 1950s.

From the early 1950s to the mid-1990s, Maricopa County's population grew by more than 500 percent (while the U.S. population as a whole was increasing by approximately 70 percent). Rates of population, employment, and housing growth experienced since the 1950s are projected to continue through 2030. Maricopa County remains one of the most rapidly growing counties in the United States. Between 2000 and 2006, its population increased 23 percent, to nearly 3.8 million (Arizona Department of Economic Security [ADES] 2007). That population is expected to nearly double by 2030, to 6.3 million.

The SR 303L Study Area is about 18 miles long and 1 mile wide, at the edge of the rapidly expanding cities of Goodyear and Surprise (at the southern and northern ends of the corridor,

respectively). In addition to the Pebble Creek development (in the south) and the Sun City Grand development (in the north), numerous additional developments are planned or underway throughout the Study Area. For example, a large residential and commercial development is proposed at the planned junction of SR 303L and the proposed Northern Parkway.

Remarkable growth in both population and employment is projected within the SR 303L corridor over the next three decades. Population is expected to grow more than 169 percent, from just over 146,000 in 2005 to nearly 394,000 by 2030. The central portion of the Study Area and general vicinity currently lack the transportation facilities and infrastructure necessary to adequately accommodate this projected growth.

Accompanying the projected population growth is the rapid expansion in the number of dwelling units in the corridor, from over 68,000 in 2005 to around 173,000 in 2030. Underlying this estimate is an average persons-per-dwelling unit expansion from 2.14 in 2005 to 2.28 in 2030, reflecting the transition of retirement-oriented development patterns to more family-oriented ones in the future. Families with children create more transportation demand than do retired people. Taking children to school, doctor's appointments, shopping, recreational and social activities, lessons, etc., generates more trips per household. Retired people tend to avoid travel during peak demand times. They also tend to own fewer vehicles per household.

In the same vein, estimated employment in 2005 of over 34,000 in the general Study Area vicinity is projected to increase 395 percent to over 170,000 by 2030. This increase is based on a decade-based average growth rate of 111 percent.

Over time, a commensurate increase in development density/intensity is projected to occur as the corridor character changes from rural to suburban-urban as future residents and, to a lesser extent, employment opportunities locate within the Study Area. Population density in 2005 in the Study Area (858 persons per square mile) is projected to grow by 169 percent by 2030 (to 2,309 persons per square mile). This mirrors the projected changes in employment density in the general Study Area vicinity by 2030 (from 202 employees per square mile in 2005 to 999 employees per square mile in 2030).

As illustrated by Table 2-2, on this page, a higher growth rate occurs from 2005 to 2020 than from 2020 to 2030. This slowing in projected growth is primarily attributable to diminishing land development opportunities as the Study Area approaches build-out.

Table 2-2. Population and employment, 2005–2030

Year[a]	Population	Employment	Employment (% of total population)	Dwelling units	Population density[b]	Employment density[c]
2005	146,286	34,427	24%	68,470	858	202
2010	221,309 (51%[d])	58,215 (69%)	26%	98,625 (44%)	1,297 (51%)	341 (69%)
2020	328,481 (48%)	119,396 (105%)	36%	143,979 (46%)	1,926 (48%)	700 (105%)
2030	393,916 (20%)	170,476 (43%)	43%	172,905 (20%)	2,309 (20%)	999 (43%)
Change: 2005–2030	+169%	+395%	Not applicable	+153%	+169%	+395%

[a] Projections are interpolated from the Maricopa Association of Governments' *Socioeconomic Projections of Population, Housing and Employment by Municipal Planning Area and Regional Analysis Zone*, April 2007

[b] persons per square mile

[c] employees per square mile

[d] Percentages in parentheses represent the percentage change from the previous data year.

SR 303L is a part of a planned system of freeways. With its extension from US 60 to I-17, it would serve as a critical connection between I-10 and I-17. It would be a northwestern "outer belt" portion of the RFS farther west than SR 101L. Since inclusion in the State Highway System in 1985, substantial right-of-way (R/W) has been obtained and the existing, interim roadway was constructed.

Proposed improvements to SR 303L would create the only regional corridor to directly serve an area that will someday be home to over 300,000 people. Without this link, residents in the northern portion of the corridor would have to travel 10 to 12 miles to the south on arterial streets to reach I-10 or travel 8 to 10 miles east on arterial streets to reach SR 101L. Arterial streets are not designed to serve such long trips while also handling shorter trips and providing access to commercial and other land uses that develop along these types of streets.

The economic vitality and quality of life of a community the size of the Phoenix metropolitan area depend on a system of major transportation facilities reasonably spaced throughout the area. Such facilities support local travel while also accommodating regional and commercial movement. The SR 303L corridor is 9 miles west of SR 101L, so it is at the outer edge of the range of typical urban

freeway spacing. Fourteen miles farther to the west is the Sun Valley Parkway. These two major roadways (SR 101L and Sun Valley Parkway) are spaced too far away to effectively serve the SR 303L Study Area.

3. Traffic Conditions/Performance

Level of Service

In addition to capacity in terms of vehicles per day (vpd), another way to consider the adequacy of a given road is to examine its ability to deliver a given level of service (LOS). LOS is a qualitative rating of the operating conditions of a road or freeway. Under this six-level, "report card" approach, an "A" represents the least congested traffic conditions and an "F" represents the most congested conditions (see Figure 2-2, on page 19).

LOS characterizes traffic conditions using factors such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience of motorists. When a road reaches its maximum vehicle capacity, traffic lacks the ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious disruption in traffic flow with extensive traffic back-ups. Additionally, motorists' maneuverability within an at-capacity traffic stream is extremely limited, adversely affecting their physical and psychological comfort. Because of these factors, most transportation planners strive to design freeways to achieve LOS D or better.

Most of SR 303L operates now at LOS E (considerable traffic congestion, with motorists unable to pass slower-moving vehicles, and inefficient travel) during peak hours. In 2003, the majority of SR 303L was operating at LOS C. Since 2003, traffic volumes have increased from around 8,000 vpd to nearly 20,000 vpd (averaged from MAG 2007 traffic counts at 15 different locations from McDowell to Beardsley roads). Correspondingly, LOS has been degraded to LOS D or E during the peak hours.

Figure 2-2. Level of service

Level of Service A

Level of Service B

Level of Service C

Level of Service D

Level of Service E

Level of Service F

Forecast traffic volumes on US 60 for 2030, southeast of the SR 303L connection, will result in traffic performance on US 60 with an unacceptable LOS. Based on 2004 traffic counts, the existing SR 303L was diverting approximately 3,000 vpd from US 60. Based on the 2030 forecast, an SR 303L improved to freeway status would divert 14,000 vpd from US 60. Through this additional increment of vehicles diverted, US 60 would—with some widening and construction of key grade separations at intersections such as Bell Road—be able to continue to provide an acceptable LOS. Without this diversion of traffic to SR 303L, transportation planners would face substantial traffic congestion and delays on US 60, but have few alternative strategies for addressing the deterioration in LOS.

Traffic Signals

Between I-10 and US 60, SR 303L has 16 urban cross streets, 14 of which are at-grade. With anticipated increased traffic volumes, each of these at-grade intersections would require the installation of traffic signals (five, not counting the signal at US 60, are now signalized). If this were to occur and motorists had to contend with stopping at traffic signals at mile intervals, SR 303L would function more as an urban arterial street instead of as a rural highway (as it does now). The installation of traffic signals at cross streets would reduce travel speed on SR 303L to less than 25 miles per hour (mph) during peak hours. Travel speed is now 60 mph during peak travel hours.

Traffic Volumes

In 1992, when SR 303L first opened to traffic, the road carried 550 to 1,100 vpd. By 2003, traffic grew to 7,267 vpd, an increase of about 560 percent in 11 years. In 2004, MCDOT opened additional road segments between US 60 and Happy Valley Road, in addition to implementing other improvements. Traffic volumes in 2004 ranged from 12,000 to just over 19,000 vpd north of US 60, reflecting the ongoing regional growth and the extension of the road. The road functions as a rural two-lane highway on which the ability to pass slower-moving vehicles is the primary criterion in determining its LOS. Design capacity (LOS C) of SR 303L south of US 60 is estimated to be 7,900 vpd, a volume exceeded regularly as early as 2003. With recently planned and newly constructed improvements, such as new urban signalized intersections with additional turn lanes, the capacity will increase to 13,500 vpd, but travel speed will decrease.

If road capacity is available, traffic forecasts indicate that the volumes on SR 303L could increase from 13,581 vpd in 2004 to 93,000 vpd in 2015 and to around 144,000 vpd in 2030. Such projections indicate ample demand will exist in the corridor to justify construction of a major transportation facility. Without adequate road capacity, motorists would choose less-congested

routes—typically adjacent arterial streets—to reach their destinations, thus shifting traffic congestion from one type of road to another type of road less capable of handling additional traffic. If SR 303L were to remain as it is today, peak-hour traffic congestion would be extensive both on this road and on the parallel arterial streets, including Citrus Road, Cotton Lane, and Sarival Avenue.

If SR 303L were improved to have traffic signals at 1-mile intervals, the average off-peak travel speed with optimal traffic signal progression would be approximately 43 mph. During peak travel times, the average speed could drop to less than 25 mph. Average speeds between 25 and 43 mph would mean that SR 303L would no longer serve its intended regional function.

Such average travel speeds and the likelihood of having to stop at numerous traffic signals would negate the road's planned regional function. Less traffic would be diverted from US 60, Citrus Road, Cotton Lane, and Sarival Avenue. Motorists would seek these other routes not designed for higher-speed travel, and the resultant diversion of traffic would necessitate improvements on these other routes. Trucks and vehicles on longer trips would be subjected to delays and backed-up traffic at numerous signalized intersections and to stop-and-go travel. The result would be increases in traffic congestion, air quality impacts, and travel time along the corridor.

In 2030, the current configuration of SR 303L would need to accommodate projected traffic volumes ranging from 22,600 to 49,700 vpd—on a highway originally designed to carry approximately 7,900 vpd. Near-term planned improvements would increase this capacity to 13,500 vpd. Travel demand in the corridor would exceed planned capacity such that the two- and four-lane road with signalized intersections and left-turn lanes at each mile would function at LOS F for several hours per day. The excess travel demand would also overload adjacent parallel streets. Traffic speeds on the unimproved SR 303L would average 21 mph in 2015 and remain at that level into the future.

4. Consolidation of Drainage Infrastructure

The off-site watershed to the west of SR 303L is largely undeveloped, consisting of desert, mountains, and agricultural fields. Runoff from the White Tank Mountains and the adjacent desert is conveyed overland and within washes, ultimately draining into the Gila River, south of the Study Area.

The existing SR 303L is a two- to four-lane rural highway with at-grade intersections at most 1-mile street crossings and with limited cross-drainage culverts and storm drain systems. Small culverts cross the roadway at approximately a dozen locations. The existing ditches and culverts convey

runoff from routine storms, but are inadequate for larger stormwater flows, i.e., flows resulting from storms expected to occur less frequently than every 2 years.

The Flood Control District of Maricopa County (FCDMC) intends to address the inadequacies of the existing stormwater drainage system. If the proposed improvements were to be built, FCDMC and ADOT would coordinate in consolidating and simplifying the drainage system to better protect the public and land uses in the SR 303L corridor from major storm runoff. Interim drainage outfalls would be constructed during the initial phase of the proposed SR 303L improvements by FCDMC. FCDMC would also handle the construction of ultimate drainage improvements.

B. Conformity with Regulations, Land Use Plans, and Other Plans

The 2003 RTP calls for a new major transportation facility—a freeway that is part of the RFS—to connect I-10 and US 60. To conform to the intent of this regional transportation plan, the proposed improvements are needed.

The Study Area for the proposed improvements encompasses land under the jurisdiction of the Cities of Goodyear, Glendale, and Surprise; Maricopa County; and land under the management of the Arizona State Land Department (ASLD).

All local jurisdictions with responsibility for planning near the SR 303L corridor have recognized the need to improve SR 303L to a freeway facility, and their land use plans and general plans reflect that need. To ensure consistency, conformity, and compatibility, the following general plans were reviewed:

- City of Glendale's *Glendale 2025: The Next Step General Plan* (2002a) and *Transportation Plan* (2002b)
- City of Goodyear's *General Plan* (2003)
- City of Surprise's *General Plan 2020: Imagine the Possibilities* (amended in 2005)
- MAG's *Valley Vision 2025* (2000) and *Regional Transportation Plan* (2003)
- Maricopa County's *White Tanks/Grand Avenue Area Plan* (updated 2004); and *2020 Eye to the Future Comprehensive Plan* (updated in 2002)

Applicable land use planning documents for ASLD were also reviewed to determine project conformity. However, the ASLD planning documents do not reflect the need for an enhanced transportation facility.

C. Conclusion

SR 303L is part of the RFS, a planned system of freeways that includes a link between I-10 and I-17 on the west and north sides of the metropolitan area. The proposed project is a vital portion of this planned system. US 60 was not designed to accommodate long-distance, through-traffic—particularly truck traffic headed for I-10 in the west Phoenix metropolitan area—and a need exists to divert such traffic to another route. The RTP calls for upgrading the existing SR 303L to a freeway in part to relieve traffic congestion along US 60 southeast of the SR 303L intersection because options to address deteriorating traffic conditions on US 60 from the SR 303L intersection southeast to the SR 101L interchange are severely limited. The issue is best faced from the demand side: diverting traffic from US 60 to another route.

Improved capacity and LOS on SR 303L are needed to accommodate rapid growth in the volume of traffic as the surrounding land is developed. Additionally, much of the truck traffic from the northwestern part of the state and Las Vegas is headed to warehousing facilities on I-10, west of I-17. Truck traffic needs to be removed from US 60 and diverted to an improved SR 303L to provide a more efficient and direct route that would partially relieve traffic congestion on US 60.

A new major transportation facility would need to be integrated into a planned, consolidated area drainage facility. Such integration would minimize costs by eliminating the need for multiple culverts under the transportation facility because drainage would be collected on the west side of the Study Area and diverted south to the Gila River rather than crossing under the transportation facility—as is currently the case—and then being diverted to the south.

Part 3. Alternatives

This part of the Draft EA describes alternatives for SR 303L that were considered with regard to transportation mode, corridor location, freeway alignment, overall freeway design, and traffic interchange design. A Preferred Alternative is identified to carry forward for further study, along with the No-Build Alternative.

A. Alternatives Considered But Eliminated from Further Study

1. Transportation Mode Alternatives

The Regional Public Transportation Authority, MAG, and ADOT collaborated to develop the RTP (2003). The RTP, when fully implemented, is designed to form an integrated transportation system and to provide accessibility, mobility, and modal choice for residents, businesses, and the economic development of the region. While preparing the RTP, MAG provided 150 public input opportunities and held 117 agency meetings and 173 stakeholder meetings. Public opportunities to help shape the RTP included expert panels, focus groups, special events, workshops, and public hearings.

The RTP recounts regional efforts to evaluate how transportation system management (TSM) and transportation demand management (TDM) programs could maximize roadway efficiency without substantial improvements in physical infrastructure.

- TSM attempts to maximize the safety and efficiency of the future transportation network using such traffic management tools as electronic message signs, traffic signals to meter traffic flow at freeway entrance ramps, closed circuit television cameras to monitor traffic flow, vehicle detectors, and other intelligent transportation system technologies.
- TDM encourages reductions in travel demand in the 2030 transportation network by promoting alternative modes of travel, including carpooling, van pooling, walking, bicycling, alternative work schedules to reduce trips, and telecommuting.

The RTP includes transit improvements: elements of a light rail system, expanded bus rapid transit (BRT) and regional bus service, flexible route transit, and commuter van pools. It also includes the widening of arterial streets, construction of new arterial street segments, arterial street intersection improvements, and the addition of HOV lanes to existing freeways.

Another nonfreeway alternative was considered: land use regulatory actions, which include increasing residential neighborhood densities and redistributing employment centers. The land use actions would intend to alter planned land uses to reduce people's dependency on vehicles and to

decrease demand on the MAG region's transportation network (resulting in increased efficiency of the network). In support, local governments could improve the performance of the regional transit system.

TSM, TDM, and transit improvements would have limited effectiveness in reducing overall traffic congestion in the Study Area and, therefore, would neither meet purpose and need criteria nor adequately address projected capacity and mobility needs of the MAG region. Based on projected regional travel demand and the extent of mobility needs in the MAG region and in the immediate Study Area, arterial street network improvements alone would not meet the needs of the MAG region. Planned land uses and associated densities in the Study Area and immediately adjacent areas are relatively stable in local planning documents. Using regulatory tools to effect change in local land uses or densities is not a viable action. No plans exist to alter planned land uses in the general area, and components to support increased efficiency in the transportation network (e.g., transit, arterial street improvements) have already been incorporated into the RTP.

Despite the improvements identified and planned in the 2003 RTP, MAG determined that additional freeways and freeway capacity—such as the proposed improvements to SR 303L—would be necessary to accommodate the increased travel demand resulting from rapid population growth in the Phoenix metropolitan area. Therefore, the SR 303L Study Team (local jurisdictions and federal, state, and regional agencies) eliminated nonfreeway alternatives from further consideration in the Study Area.

However, upgrading SR 303L to a freeway facility would not preclude transit improvements from occurring in the Study Area. The MAG plan includes BRT service along SR 303L from I-10 to Bell Road and along both Bell Road and I-10. It also includes bus service as part of the "super grid system" on Bell Road from SR 303L eastward. A future park-and-ride lot is planned near the intersection of SR 303L and Northern Avenue. Buses would be able to use the HOV lanes on the ultimate upgraded SR 303L. In the shorter term, all transit vehicles would be able to use the general purpose lanes on SR 303L.

2. Corridor Alternatives

During early public information meetings, members of the public suggested two alternative alignments for SR 303L: Sun Valley Parkway and the planned CANAMEX trade route connecting Canada, the United States, and Mexico. Both alternative corridors are well-removed from the existing SR 303L: 14 miles and 19 miles to the west, respectively. The Sun Valley Parkway would serve development eventually occurring west of the White Tank Mountains. The parkway's

upgrading and extension north to Wickenburg, with a connection to US 60, would be considered in future planning. If and when such an expansion were implemented, some through-traffic might use that corridor to reach I-10 instead of using US 60 and the existing SR 303L. Because the largest share of traffic projected to use SR 303L would originate from places other than US 60 at Wickenburg, the Sun Valley Parkway alternative would not meet the proposed project's purpose and need and was eliminated from further consideration.

Based on analyses contained in the ADOT and MAG final report for the CANAMEX Corridor (ADOT 2000a), the proposed CANAMEX route (located 5 miles west of the Sun Valley Parkway, along Wickenburg and Vulture Mine roads) would divert only a small portion of traffic from the existing SR 303L corridor. Because of its distance from regional traffic needs and growth, this alignment would not satisfy the project purpose and need and was eliminated from further study.

3. Alignment Alternatives

Based on freeway spacing (see Part 2, *Project Purpose and Need*, on page 10) and avoidance of existing urban development, SR 303L's general corridor was initially identified in the *West Area Transportation Analysis* (MAG 1984). Through that study, it was determined that the logical location for SR 303L would be west of Luke AFB and east of the White Tank Mountains.

In the late 1980s and early 1990s, various alignment studies were conducted. At that time, nonagricultural land use in the area west of Cotton Lane consisted of a large rural subdivision, a state prison, and an abandoned horse racetrack (all of which are still there). Between Cotton Lane and Sarival Avenue, the majority of land was in agricultural production. The Luke AFB crash zone was, and continues to be, located east of Sarival Avenue. Avoidance of the state prison and the Luke AFB crash zone led to the selection of a preliminary alignment between Cotton Lane and Sarival Avenue.

The *Estrella Freeway Draft Reconnaissance Report*, prepared in February 1987, assessed various alignments for SR 303L (at that time called the Estrella Freeway) from MC 85 to I-17 (Cella Barr & Associates 1987). Within the project limits from the Gila River to US 60, eight alignment alternatives were evaluated on or between Cotton Lane and Sarival Avenue. Based on that evaluation, and generally for the reasons already discussed, the basic alignment was selected along or near Cotton Lane. This alignment was refined in *Estrella Freeway Preliminary Location Plan and Profile* (Cella Barr & Associates 1991).

In 1992, ADOT designed and constructed the existing SR 303L roadway. To construct the roadway, irrigation systems were modified and utilities were relocated to facilitate future freeway

construction. The alignment has been included in the planning documents for the Cities of Goodyear, Glendale, and Surprise, and construction of the roadway has spurred development along the length of the corridor, particularly near the northern and southern ends (see Part 2, *Project Purpose and Need*, on page 10). As a result, the existing SR 303L alignment has proved to be a logical place to construct improvements to upgrade the roadway to freeway status. Any other alignment would be prohibitively disruptive to existing and planned residential, commercial, and agricultural uses. All other alignments were eliminated from further study.

4. Overall Freeway Design Alternatives

The existing SR 303L crosses 16 arterial streets between I-10 and US 60. Two of the crossings—at Clearview and Mountain View boulevards—are already grade-separated (without service traffic interchanges). At the remaining 14 crossings, two design alternatives were considered: either an at-grade, signalized intersection or a grade-separation with or without a service traffic interchange.

If the crossings were to be signalized, SR 303L would function as an arterial street, which would offer little advantage over other arterial streets. For reasons explained in Part 2, *Project Purpose and Need*, this alternative crossing design would not meet the purpose and need for the project and was, therefore, eliminated from further study.

Grade separations—with or without service traffic interchanges—were carried forward as design alternatives because only they could provide the free flow of traffic necessary to meet criteria discussed in Part 2, *Project Purpose and Need*. Part 2 also describes the deficiencies of a roadway with traffic signals at 1-mile intervals and the necessity for a fully access-controlled, grade-separated urban freeway to meet the proposed improvement project's purpose and need criteria.

5. Traffic Interchange Design Alternatives

To meet traffic needs and growth demands in the West Valley, numerous traffic interchange design alternatives were developed, evaluated, and reviewed from 2002 through 2008 by MCDOT, ADOT, and other agency stakeholders, including the Cities of Goodyear, Glendale, and Surprise; Luke AFB; FCDMC; and FHWA. Various system traffic interchange design alternatives—at I-10 and at the proposed Northern Parkway—and service traffic interchange design alternatives were evaluated. Table 3-1, on page 28, provides illustrations and descriptions of typical system and service traffic interchanges. Tables 3-2 and 3-3, on pages 29 and 30, identify the various alternative configurations evaluated for each system traffic interchange for SR 303L, including engineering and traffic operational issues, R/W needs, and potential environmental impacts.

Table 3-1. Traffic interchange descriptions

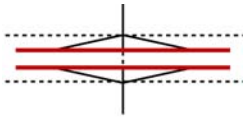
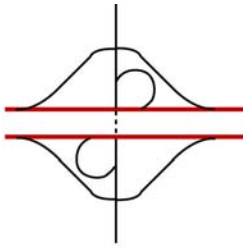
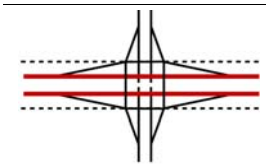
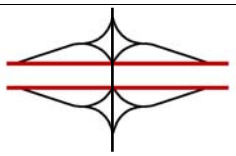
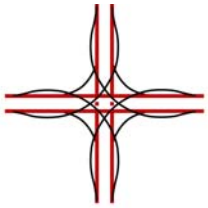
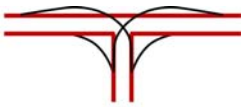
Illustration and type	Description
Service traffic interchanges	
 Diamond	A basic four-ramp interchange between a freeway and a cross street. The four diagonal ramps, one in each quadrant, suggest a diamond shape. This is the most widely used service traffic interchange type.
 Partial Cloverleaf	A service traffic interchange that provides loop on-ramps to the freeway in addition to four spread diamond-type ramps. This interchange is suitable for large-volume turning movements. Loop off-ramps are not desirable.
 Platform Diamond	A service traffic interchange option used when traffic volumes and operational constraints do not permit left turns from the cross street. The interchange is formed by diamond-type ramps from the freeway and the cross street intersecting at a separate platform located between the highway and the cross street where the turning movements are made.
 SPUI	A single-point urban interchange (SPUI) shifts the intersection of the ramps and the cross street toward the center of the service traffic interchange. The use of "inside left turns" reduces the number of traffic signal phases and increases the left-turn efficiency of the interchange.
System traffic interchanges	
 Full Directional	A four-level interchange used where two freeways intersect to accommodate a high demand for all turning movements. It is designed to maintain higher speeds and uninterrupted traffic flow. This interchange type is commonly referred to as a system traffic interchange.
 "T" Interchange	This system traffic interchange option is used when one freeway terminates into another freeway. It is designed to maintain higher speeds and uninterrupted traffic flow.

Table 3-2. SR 303L and I-10 system traffic interchange alternatives

System traffic interchange alternatives	Engineering and traffic operational issues[a]	Right-of-way (R/W)	Potential environmental impacts
Alternative 1 Base configuration: T interchange	Poor access; needs to place the Roosevelt Irrigation District canal in a structure over a major system ramp; doesn't allow for the extension of SR 303L[b] to the south	Needs R/W from Canyon Trails residential development	Residential R/W take and traffic lanes constructed close to sensitive noise receivers
Alternative 2 Depress SR 303L and Cotton Lane under I-10[c]	Eliminated because of profile conflicts	Needs R/W from Canyon Trails	Residential R/W take and traffic lanes constructed close to sensitive noise receivers
Alternative 3 Depress frontage roads under I-10	Eliminated because of profile issues	Needs R/W from Canyon Trails	Residential R/W take and traffic lanes constructed close to sensitive noise receivers
Alternative 4 (Preferred) Depress SR 303L under McDowell Road (MP 4.0) and I-10; shift I-10 north	Balanced access to all quadrants	Avoids R/W take at Canyon Trails; requires R/W from Goodyear Market Place Swap Meet and undeveloped land	No residential R/W take; shifts traffic lanes farther away from noise receivers
Alternative 5 Same as Alternative 4; eliminates certain frontage roads	Better access on west side than on east side	Avoids R/W take at Canyon Trails; requires R/W from Goodyear Market Place Swap Meet and undeveloped land	No residential R/W take; shifts traffic lanes farther away from noise receivers
Alternative 6 Same as Alternative 4; eliminates certain frontage roads and adds additional ramps on east side of I-10	Restricts access to east side of Cotton Lane	Avoids R/W take at Canyon Trails; requires R/W from Goodyear Market Place Swap Meet and undeveloped land	No residential R/W take; shifts traffic lanes farther away from noise receivers

[a] Engineering and traffic operational issues include level of service, capacity, connectivity, geometry, structures, drainage, constructability, and cost. Issues were reviewed, as appropriate, for each alternative and documented in the *Draft Design Concept Report, SR 303L, I-10 to US 60* (MCDOT 2006).

[b] State Route 303 Loop

[c] Interstate 10

Table 3-3. SR 303L and Northern Parkway system traffic interchange alternatives

System traffic interchange alternatives	Engineering and traffic operational issues[a]	Right-of-way (R/W)	Potential environmental impacts
Alternative 1 Interchange on half-mile section line, with directional ramp at Olive Avenue	Some connectivity issues; needs half-diamond interchange; moderate cost	Requires about 40 acres of R/W	Area is farmland; no relocations required; no natural or cultural resources present
Alternative 2 Full directional interchange on half-mile section line	Access issue to connect to Olive Avenue; construction phasing issues; moderate cost	Requires about 40 acres of R/W	Area is farmland; no relocations required; no natural or cultural resources present
Alternative 3 (Preferred) T-interchange on half-mile section line with frontage roads	Best connectivity to Northern Parkway and SR 303L[b]; provides split diamond traffic interchange at Northern and Olive avenues; highest number of free-flow connections; highest cost	Needs most amount of R/W—about 65 acres; no displacements	Area is farmland; no relocations required; no natural or cultural resources present

[a] Engineering and traffic operational issues include level of service, capacity, connectivity, geometry, structures, drainage, constructability, and cost. Issues were reviewed, as appropriate, for each alternative and documented in the *Draft Design Concept Report, SR 303L, I-10 to US 60* (MCDOT 2006).

[b] State Route 303 Loop

Early in the planning process, it was determined that the SR 303L profile would dictate the configuration of the service traffic interchanges. The profile options for SR 303L were:

- remain at-grade, with cross streets spanning SR 303L on bridges
- be elevated over cross streets, which would remain at-grade
- be depressed beneath the cross streets, which would remain at- or near-grade

The options of cross streets spanning or going beneath SR 303L were examined for each traffic interchange. Depressing SR 303L would be viable between US 60 and Greenway Road (it is already depressed between US 60 and Bell Road) and between Thomas Road (MP 5.0) and I-10 because of terrain. A depressed freeway between Greenway Road and Thomas Road would be difficult to drain and, therefore, more expensive to maintain because it would require pump stations and would create excessive amounts of excavated material requiring disposal. Technical memoranda were prepared to address profile issues for most segments of SR 303L and are included in the DCR. In general, the local jurisdictions prefer that SR 303L be elevated over or depressed beneath the cross streets. These options were carried forward.

6. Drainage Feature Alternatives

To address regional flood control issues, FCDMC—with participation by ADOT—is preparing the *Loop 303 Corridor/White Tanks Area Drainage Master Plan Update*, to be completed in late 2008. Within the immediate watershed, stormwater generally flows from northwest to southeast and in many locations would be isolated by the proposed SR 303L improvements. A component of this project within the 220-square-mile watershed is a proposed collection facility west of, and paralleling, SR 303L to intercept flows originating higher in the watershed and to convey those flows to the Gila River. A number of alternatives were investigated by FCDMC for outfall channel and detention basin locations, but hydrologic and hydraulic constraints limited the available alternatives. By mutual agreement among FCDMC, MCDOT, and ADOT, the basic concept for the off-site drainage system for SR 303L is proposed to be the system derived through the area drainage master plan (ADMP). This system is designed to meet both FCDMC and ADOT guidelines. A map of the regional drainage system and a cross-section of a concrete channel along SR 303L are included in Appendix A, *Drainage Information*.

B. Alternatives Considered for Further Study

1. No-Build Alternative

Under the No-Build Alternative, no capacity or main line widening improvements to SR 303L between I-10 and US 60 would occur and SR 303L would remain much as it is today. Under the No-Build Alternative, all major crossings of SR 303L between I-10 and US 60 would be signalized at appropriate future dates based on area growth.

The No-Build Alternative would result in a gradual transformation of SR 303L from a rural highway to an urban arterial street. Part 2, *Project Purpose and Need*, on page 10, describes deficiencies and problems associated with a decision to not address the need for a major transportation facility to meet increasing travel demand. The No-Build Alternative failed to meet purpose and need criteria, but was carried forward for comparative purposes for assessing the impacts and suitability of the build alternative.

2. Preferred Alternative

The Preferred Alternative, at build-out, would consist of improvements to the existing SR 303L to create a ten-lane (four general purpose lanes and one HOV lane in each direction) fully access-controlled freeway with auxiliary lanes between traffic interchanges. The proposed improvements include 2 system traffic interchanges, 15 service traffic interchanges, and various drainage

improvements. These ultimate configuration improvements, however, are not currently funded or programmed in the MAG RTP.

The following sections describe how the proposed improvements would address Study Area transportation needs, as discussed in Part 2, *Project Purpose and Need*, on page 10.

Connection of West Phoenix Metropolitan Area to Northwest Arizona and Nevada

An improved SR 303L would be a vital link in a system of freeways and highways providing the most efficient way to travel from the Phoenix metropolitan area to Las Vegas. The proposed improvements to SR 303L would provide a third major highway corridor for the northwestern Phoenix metropolitan area (in addition to the route from US 60 to SR 101L and the route from SR 74 to I-17). The proposed improvements to SR 303L would enhance the connection from downtown Phoenix on I-10 to I-40 and to Las Vegas.

Improving SR 303L to freeway status would divert traffic from parallel roads and, perhaps, postpone the time when these roads would need to be widened. This time buffer could help county and local municipality budgets and increase the potential for road improvements being built by developers as the area develops. SR 303L would also divert some traffic from existing urban arterial streets. For example, up to 3,000 vpd would be diverted from Reems Road and Sunrise Boulevard through the Sun City Grand area in 2020 if the proposed improvements were completed.

SR 303L now diverts approximately 3,000 vpd from US 60. Based on MAG's 2025 traffic forecast, an SR 303L functioning with traffic signals at 1-mile intervals would continue to divert 3,000–5,000 vpd from US 60. If improved to freeway standards, SR 303L would divert 14,000 vpd and enable US 60 to continue providing acceptable levels of service with some widening and perhaps construction of key grade separations. Without upgrading the existing SR 303L to freeway status, traffic congestion on US 60 between SR 303L and SR 101L would continue to increase, with no plans in place that would solve the growing traffic congestion problem.

A freeway-status SR 303L would intercept US 93/US 60 truck traffic heading to the I-10 warehousing hub located west of I-17. This more direct and efficient truck routing would remove a substantial portion of the trucks traveling on US 60 southeast of the SR 303L intersection, thereby alleviating congestion on the portion of US 60 leading to SR 101L (see Table 3-4, on page 33).

Table 3-4. Existing and future SR 303L truck volumes with Preferred Alternative

Year (corridor design)	Average daily traffic	Truck trips per day				Trucks as a percentage of ADT[a, b]
		Local	Metropolitan area	Through	Total	
2003 (existing SR 303L)	9,800	544	368	559	1,471	15.0
2015 (six-lane configuration)	100,000	5,550	551	838	6,939	6.9
2030 (ten-lane configuration)	150,000	8,325	735	1,117	10,177	6.8
2030 (no build)	27,000	2,198	735	1,117	4,050	15.0

[a] average daily traffic

[b] based on *Loop 303 Truck Origin-Destination Study*, 2004, Maricopa County Department of Transportation

Accommodation of Regional Growth and Linkage to Regional Freeways

Upgrading SR 303L to freeway status would provide relief for traffic congestion on US 60, thereby benefiting the region's overall transportation network. It would also provide an immediate local benefit by drawing traffic away from nearby arterial streets. The proposed improvements would complement the plans, policies, and growth objectives of municipalities in the region and accommodate the region's population growth.

A Link in the Regional Freeway System

SR 303L is part of a planned system of freeways linking I-10 to I-17 on the west and north sides of the metropolitan area. The proposed project is a vital portion of this planned system. Upgrading SR 303L to a freeway would divert long-distance traffic from US 60, which is not designed to accommodate this type of traffic.

A Regional Route

An upgraded SR 303L would serve the developing area west of the Agua Fria River and east of the White Tank Mountains. Urban development is rapidly expanding in the cities of Goodyear and Surprise, at the southern and northern ends of the corridor, respectively. The proposed improvements to SR 303L would provide a regional freeway to accommodate through traffic and remove it from the local arterial street network, which is designed for medium-length trips.

Improving SR 303L to freeway standards would divert traffic from 1) parallel local streets such as Cotton Lane and Sarival Avenue, which may postpone the time when these streets need to be

widened, and 2) urban arterial streets such as Reems Road and Sunrise Boulevard. The new freeway facility would be consistent with the needs and planning for the region by reducing travel demand on local arterial streets and improving traffic conditions in the corridor.

Facilitation of Efficient Expansion of the Metropolitan Area

The SR 303L corridor crosses a region initially developed for agricultural purposes. As a result, the corridor has an established water supply, is flat and easy to develop, and is served by an existing grid of arterial streets. The area is primed to accommodate future urban growth.

SR 303L was first placed in the LRTP in 1985, after a study had recommended this route (but also indicated that the route may not be needed as a freeway prior to 2005). The study recommended that the R/W preservation process begin for the freeway routing. ADOT worked with property owners to have much of the freeway R/W dedicated in exchange for the early construction of the freeway facility in the corridor.

This corridor reflects effective community planning where regional infrastructure needs have been identified, planned, and designed well in advance of development to minimize conflicts and to promote logical development patterns. Current developers are fully aware of the proposed improvements and are planning their developments to take advantage of the mobility and access that would be provided by the proposed upgrades to SR 303L. With the proposed improvements to SR 303L and the established grid of arterial streets, the corridor would be well-suited to support substantial growth and provide the transportation infrastructure necessary to serve that growth. In contrast, areas north of the corridor have few established roads, numerous natural and man-made constraints to developing a road system, and no planned freeways. Growth in the SR 303L corridor is already more consistent with sound regional development planning than most other areas adjacent to the current urbanized area. Implementation of the proposed improvements would accommodate development in the corridor in a rational manner and perhaps delay development in other areas less compatible with efficient regional development patterns.

Accommodation of Traffic Conditions/Performance

Level of Service and Traffic Volumes

In 2007, SR 303L had nearly 20,000 vpd (averaged from MAG traffic counts at 15 different locations from McDowell to Beardsley roads) and was operating at LOS D or E during the peak hours. In 2018, SR 303L with the proposed initial improvements (three lanes in each direction)

would have around 105,000 vpd at LOS C. By 2030, traffic conditions on SR 303L would deteriorate to LOS E, with 144,000 vpd.

Under the ultimate configuration (four lanes and an HOV lane in each direction), the roadway performance would improve to LOS C, with an average daily traffic (ADT) volume of 155,000 vpd. Traffic conditions would not deteriorate to LOS E—at an ADT of around 200,000 vpd—until an uncertain date beyond 2035.

A ten-lane freeway (four general purpose lanes and one HOV lane in each direction) with auxiliary lanes between on- and off-ramps would be expected to accommodate projected traffic volumes with only modest slowing during peak travel demand conditions. (An auxiliary lane begins at an on-ramp and ends at the next off-ramp, without passing through any traffic interchanges in between. It helps motorist merge onto or exit the freeway.) All freeway segments, weaving areas, ramps, and signalized intersections are expected to operate at an acceptable LOS with the proposed ultimate improvements.

Traffic would be relatively free-flow, and average travel speeds would be approximately 65 mph during most of the day. This type of freeway would fully serve the regional road functions described earlier and would continue to serve the corridor well beyond the current forecast growth in the area. The average peak-hour speed on SR 303L in 2030 would be between 53 and 65 mph with the proposed improvements and between 12 and 29 mph without the improvements.

Traffic Signals

With improvements to SR 303L, signalized intersections with arterial streets would remain, but the freeway would be grade-separated from all of these, using service traffic interchanges instead. Traffic on the freeway would flow unimpeded by the arterial street connections. System traffic interchanges would be provided at I-10 and the proposed Northern Parkway to enable efficient connections between SR 303L and these other freeway facilities. The three-level service traffic interchange at US 60 would need traffic signals but would provide an enhanced connection between SR 303L and US 60.

Access Management

The access management policy for the improved SR 303L would not allow access except at service traffic interchanges generally spaced 1 mile apart at the major crossroads. As additional R/W would be acquired for the proposed improvements, all access points—other than the intersections with the major crossroads (see Table 3-5, on page 41)—would be closed. Parcels adjacent to SR 303L would

have access from the west-to-east arterial cross streets and not from SR 303L. If the improvements were fully implemented, no additional access points would be likely to be implemented. Any changes to the freeway access points would have to be approved by ADOT and would need to meet applicable design standards.

Consolidation of Drainage Infrastructure

The proposed project's associated outfall channel and series of detention basins would collect regional and roadway drainage from west of SR 303L. This system would protect the roadway from stormwater flows and would be a part of the overall flood control system for the area east of the White Tank Mountains. Collecting drainage along the west side of SR 303L would reduce the need for cross-drainage pipes or culverts under SR 303L and provide capacity for flows resulting from 100-year storms. The final outfall is to the Gila River, approximately 5 miles south of I-10. FCDMC designed this off-site drainage system concept as part of the *Loop 303 Corridor/White Tanks Area Drainage Master Plan*. FCDMC is a financial partner in the construction of this drainage system between I-10 and US 60, and is currently updating drainage concepts from the Gila River to I-10.

Implementation of the proposed SR 303L improvements and of FCDMC's drainage plans would benefit land located west of SR 303L by providing a drainage system with a more direct outfall to the south, to the Gila River. Reduction—or, in some cases, elimination—of off-site flows onto land located east of SR 303L would simplify and reduce costs of drainage systems on that side of the proposed improvements.

3. Description of the Preferred Alternative

The following sections describe the interim and ultimate configurations of SR 303L and the construction phasing under the Preferred Alternative. They also describe the traffic interchanges that would be built along SR 303L and R/W needs along the corridor.

Interim and Ultimate Freeway Configurations

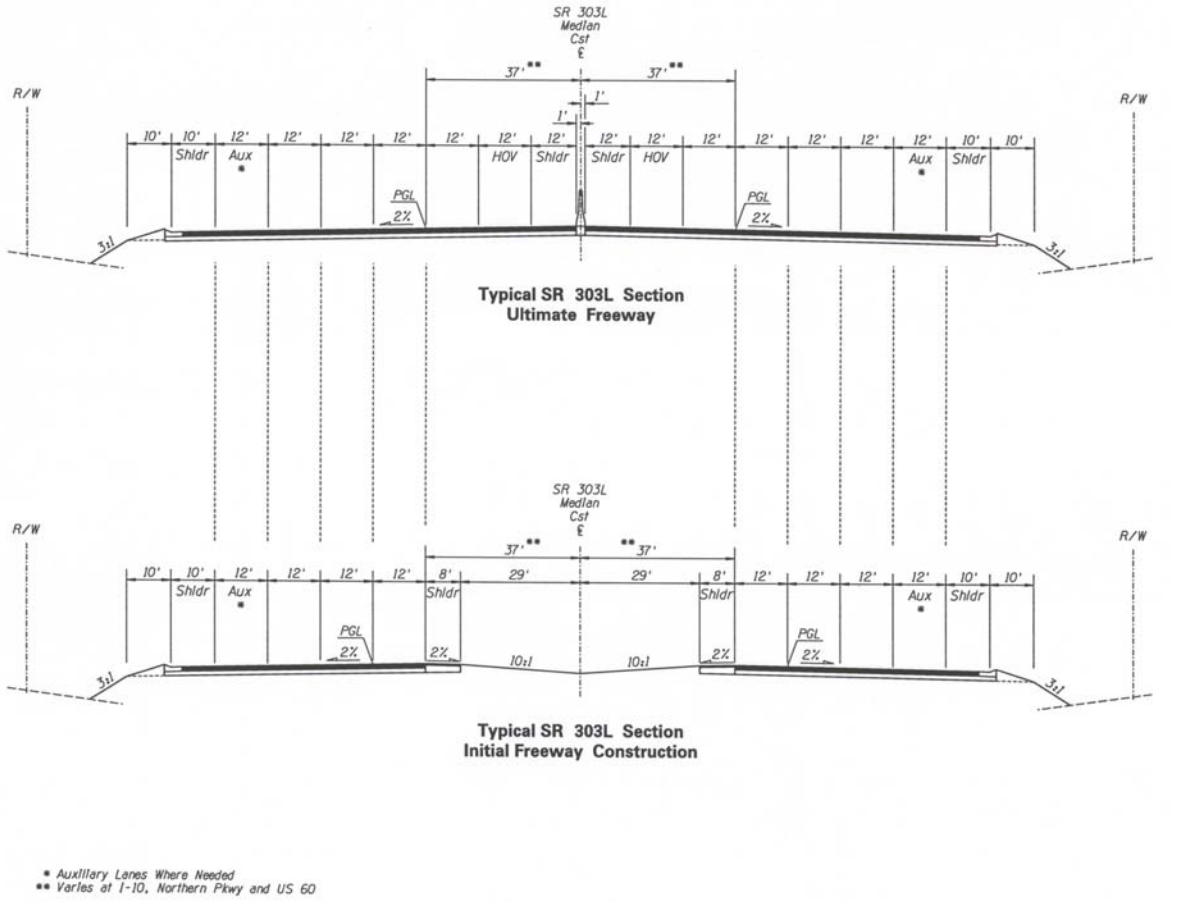
Under the Preferred Alternative, the interim SR 303L freeway would have three general purpose lanes in each direction. The ultimate freeway would have four general purpose lanes and one HOV lane in each direction (see Figure 3-1, on page 38). Consideration of how best to construct the ultimate configuration of SR 303L over time and with uncertain funding availability would need to balance the following considerations:

- cost minimization (for both interim and ultimate conditions)
- constructability
- ease of conversion to the ultimate freeway
- minimization of throwaway of existing facilities while converting to the ultimate freeway condition
- safety
- traffic capacity
- ability to accommodate free-flow traffic in the interim condition

The majority of the new construction for the interim freeway would be integrated into the ultimate freeway, thereby reducing the cost of constructing the ultimate freeway. Any pavement intended for only temporary purposes would be asphalt, while ultimate condition pavement would be Portland cement concrete overlaid with rubberized asphalt.

Irrigation channels, tailwater ponds, and other irrigation facilities that conflict with the interim roadway or with drainage improvements would be relocated to their ultimate locations to avoid their having to be moved a second time when the ultimate freeway would be constructed.

Figure 3-1. SR 303L typical sections (ultimate and interim configuration)



Source: *Draft Design Concept Report: SR 303L I-10 to US 60* – Volume 1, prepared for Maricopa County Department of Transportation by URS Corporation, 2006

Construction Phasing

If the Preferred Alternative were selected, the preliminary plan would be to construct the proposed improvements to SR 303L in increments linked to funding availability. The drainage system would need to be developed further in coordination with FCDMC, including drainage basins and interim outfalls as necessary for segmented construction. All freeway construction would be concurrent with construction of the appropriate interim and final drainage facilities. Initial construction on the corridor would be the northern half of the I-10 system traffic interchange, including the realignment of I-10.

Traffic Interchanges

Service Traffic Interchanges

The local jurisdictions (Cities of Goodyear, Glendale, and Surprise) prefer SR 303L to be elevated over or depressed under the cross streets. These configurations would typically provide the greatest access along the cross streets.

Engineering and planning decisions regarding the merits of different vertical profile options at each cross street were evaluated using four categories: R/W, structures, earthwork, and total cost. The following discussion summarizes these considerations:

- R/W – Less crossroad R/W would be needed to take the freeway over the cross streets than the cross streets over the freeway (approximately 2 acres per interchange). In general, the decrease in the acreage is attributable to eliminating the need for additional R/W along the cross streets, which would be necessary to build embankments to elevate the crossroad. Local jurisdictions prefer this option because of the increase in developable land along crossroads adjacent to the service traffic interchanges.
- Structures – The cost of a structure to take the freeway over a cross street compared with taking a street over the freeway is generally $600,000–$800,000 more per location (2006 dollars). The actual cost would vary with the width needed for a given street. This comparison was based on the ultimate, ten-lane configuration of SR 303L. However, if the cross street were kept at-grade with the freeway passing overhead, the structure needed for the cross street to pass over the drainage channel would be much shorter. As a result, the cost would be reduced by approximately $500,000–$700,000 per location. The net result would be little difference in total structure costs for freeway-over versus street-over.
- Earthwork – In general, elevating SR 303L over at-grade cross streets would result in approximately 20 percent less earthwork than if the streets were elevated over the freeway.
- Total cost – The proposed plan to elevate SR 303L over Camelback Road (MP 7.0), Bethany Home Road, Glendale Avenue (MP 9.0), Peoria Avenue (MP 12.0), Cactus Road, and Waddell Road is estimated to save several hundred thousand dollars per location in combined earthwork, structures, and R/W costs. In addition, maintenance of traffic on the crossroads during construction would be simplified if the Preferred Alternative were selected. With the proposed plan, the cross streets would remain at-grade and open to traffic (except for some short-term closures) during construction. According to the DCR, the proposed plan at Northern Avenue to take SR 303L over Northern Avenue is estimated to cost more than projected for taking Northern Avenue over SR 303L. The additional cost is largely attributable to the effect that

implementation of the proposed plan would have on the system traffic interchange with the proposed Northern Parkway.

Currently, 16 cross streets intersect SR 303L or Cotton Lane from Van Buren Street (MP 3.0) to US 60 at 1-mile spacing. Each of these cross streets would require grade separations or traffic interchanges with SR 303L, with the exception of Clearview and Mountain View boulevards, which are already grade-separated and are not foreseen to become traffic interchanges. The remaining 14 cross streets that would require modifications and the addition of grade separation or traffic interchange structures are Van Buren Street, McDowell Road, Thomas Road, Indian School Road, Camelback Road, Bethany Home Road, Glendale Avenue, Northern Avenue, Olive Avenue, Peoria Avenue, Cactus Road, Waddell Road, Greenway Road, and Bell Road.

The evaluation of a tight-diamond traffic interchange versus a single-point urban interchange (SPUI) for the arterial cross streets would be made during the final design process. For the purpose of this Draft EA, the tight-diamond traffic interchange configuration is analyzed because it typically occupies a greater footprint than the SPUI, thereby offering a conservative analysis of potential impacts.

In general, SR 303L would be elevated over existing cross streets (see Table 3-5, on page 41) and return to near ground level between cross streets. This configuration is proposed from south of Indian School Road to north of Waddell Road. The freeway would be fully depressed at I-10 and McDowell Road and partially depressed at Thomas Road. The roadway would be elevated over the Roosevelt Irrigation District (RID) canal and Van Buren Street (where Van Buren Street would still intersect with Cotton Lane at grade). Going northward from Waddell Road, the freeway would be partially depressed at Greenway Road, fully depressed at Bell Road, and partially depressed to just south of US 60. The freeway would then rise to go over US 60 and the Burlington Northern Santa Fe (BNSF) Railroad tracks, using the existing bridge for southbound traffic.

Table 3-5. SR 303L configuration at cross streets

Location	Cross street profile at SR 303L[a]	SR 303L profile at cross street	Interchange type[b]
Van Buren Street	At grade (with Cotton Lane)	Elevated	Split diamond with Thomas Road
McDowell Road	At-grade (with Cotton Lane)	Depressed	Grade separation only with interchange frontage roads
Thomas Road	Partially elevated	Partially depressed	Split diamond with Van Buren Street
Indian School Road	At grade	Elevated	Tight diamond
Camelback Road	At grade	Elevated	Tight diamond
Bethany Home Road	At grade	Elevated	Tight diamond
Glendale Avenue	At grade	Elevated	Tight diamond
Northern Avenue	At grade	Elevated	Split diamond with Peoria Avenue
Olive Avenue and BNSF[c] tracks	At grade	Elevated	Grade separation only
Peoria Avenue	At grade	Elevated	Split diamond with Northern Avenue
Cactus Road	At grade	Elevated	Tight diamond
Waddell Road	At grade	Elevated	Tight diamond
Greenway Road	Partially elevated	Partially depressed	Tight diamond
Bell Road	At grade	Depressed	Tight diamond
Clearview Boulevard[d, e]	Elevated	Depressed	Grade separation only
Mountain View Boulevard[e]	Elevated	Depressed	Grade separation only
US 60[f] (Grand Avenue)	At grade	Elevated	Depressed SPUI[g]

[a] State Route 303 Loop
[b] Interchange types are tentative; actual type would be determined during the final design process.
[c] Burlington Northern Santa Fe Railroad
[d] approximate Union Hills Drive section line
[e] structure exists now
[f] United States Route 60
[g] single-point urban interchange

With the exception of the US 60 traffic interchange, service traffic interchanges would have one-lane off ramps that widen to three lanes as they approach the cross streets. The three lanes would consist of a left-turn lane, a middle lane, and a right-turn lane. The middle lane would be designated as a left-turn or right-turn lane for each location based on traffic estimates at the time of the final design process. The on-ramps would have two lanes that taper to one lane near the gore.

Cross streets would be reconstructed to the 300-foot control-of-access limits. They would be constructed to their ultimate width as shown in current approved transportation plans of the local jurisdictions.

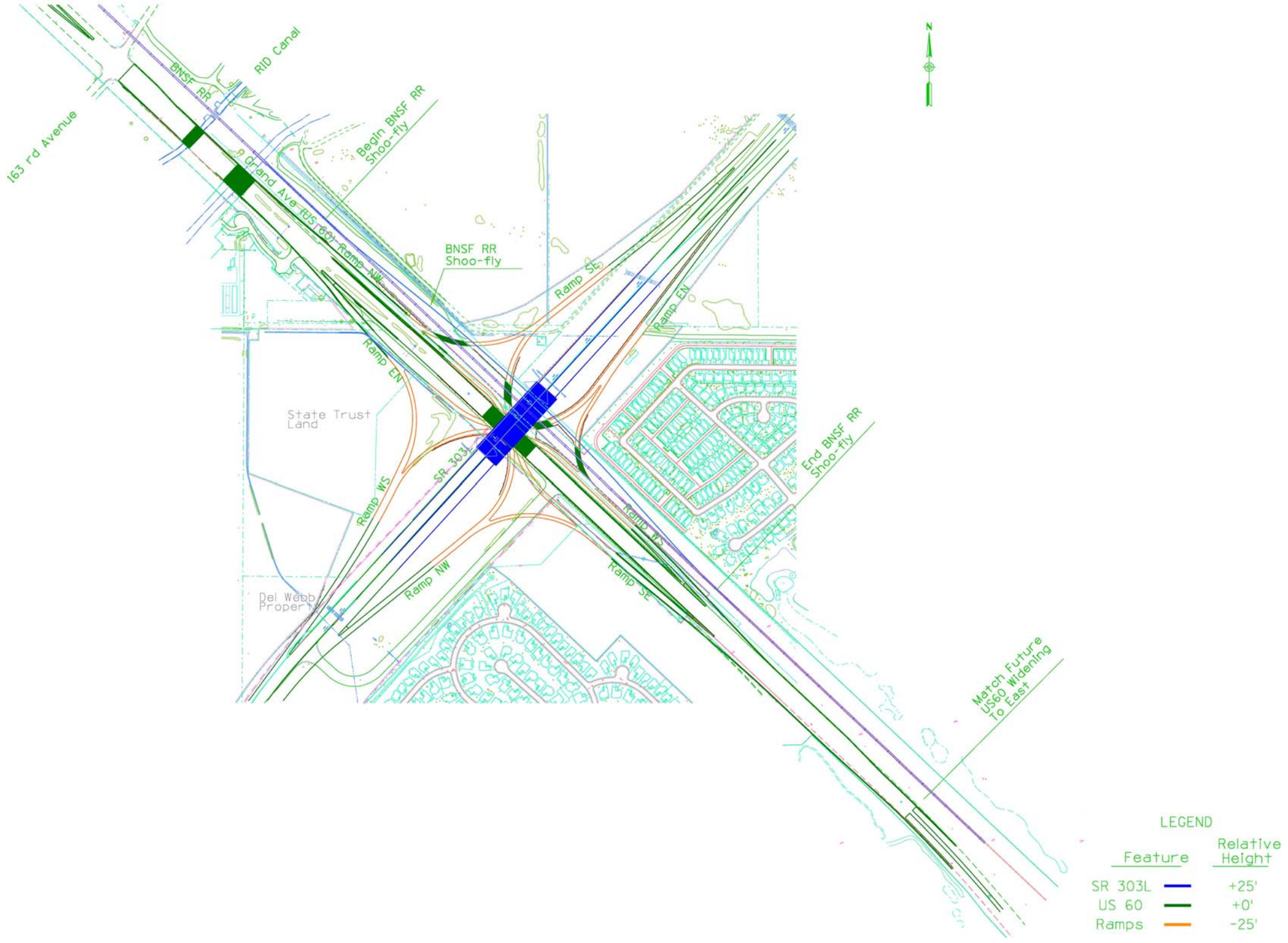
Service Traffic Interchange at US 60

US 60 (Grand Avenue) is an existing ADOT urban arterial street, but is planned to become an "enhanced arterial/limited expressway." At SR 303L and US 60, a three-level service traffic interchange using a depressed SPUI would be constructed. A preliminary engineering analysis as part of the DCR showed that this configuration would provide the greatest benefits for safety and for efficient traffic operation.

This configuration would feature SR 303L one level up as it exists today, crossing over US 60 and BNSF. Ramps on the north side of US 60 would be constructed to pass under the railroad tracks because at-grade ramp crossings of the BNSF tracks are not allowed. US 60 would remain at-grade, on a structure crossing over the SPUI ramp intersection (Figure 3-2, on page 43). All ramps would be depressed one level below grade, and would connect to US 60 approximately 2,000 feet from the signalized ramp intersection. The depressed ramps would prohibit any access to US 60 within the limits of the ramps, resulting in the need for total takes of parcels located along US 60. The length of the ramps would also require the widening and reconstruction of US 60 from the 163rd Avenue intersection to a point approximately 3,500 feet east of the centerline of SR 303L, which would match into the widening project currently under design for US 60. A two-phase traffic signal would control the intersection of the northbound-to-westbound, southbound-to-eastbound, westbound-to-southbound, and eastbound-to-northbound ramp movements. All right-turn movements would be on free-flow ramps, spread more than on traditional SPUIs because of the vertical differential between crossroad and ramp (which does not occur on the traditional SPUI).

This configuration would minimize the facility's height above ground and the resultant visual and noise level impacts for nearby neighborhoods. The interchange would need traffic signals at the depressed ramp intersections and a pump station for drainage that would discharge into the proposed drainage basins located southwest of the interchange. Ramp geometry and signal placement would be designed to optimize traffic signal visibility. The interchange would have moderate-to-high construction costs, and would need moderate amounts of R/W (including approximately 1 acre of permanent R/W from BNSF for US 60 and ramp widenings, and an access permit from BNSF for approximately 1.2 acres for maintenance of railroad bridges over the ramps and the SR 303L bridges over the railroad) when compared with other alternatives considered.

Figure 3-2. SR 303L/US 60 service traffic interchange (Preferred Alternative)



Any future design modifications to the proposed service traffic interchange at SR 303L and US 60 would require a reevaluation of the environmental document.

The existing connection between SR 303L and US 60 is provided by a two-way, "jug-handle" access road in the southeast quadrant of the SR 303L/US 60 interchange, and includes a signalized intersection both at US 60 and at SR 303L. This access road would be removed as part of the proposed interchange improvements. The depressed SPUI would relocate traffic away from existing homes in the southeast quadrant and would improve the traffic operations between SR 303L and US 60.

To construct the structures to take the ramps under the railroad, a proposed shoo-fly to the north of the existing rail alignment would be constructed. A shoo-fly is a temporary stretch of track that detours trains around construction zones. This shoo-fly would allow construction of a portion of the railroad bridges, replacement of the main track on its original alignment, and then completion of the remaining structures. The layout of the shoo-fly has the concurrence of BNSF and the geometry is such that it accommodates the BNSF Phoenix Subdivision speed of 49 mph. BNSF would be afforded the opportunity to comment during final design. The realignment of the BNSF railroad would result in temporarily moving the tracks closer to the existing neighborhood at the northeast corner of the interchange by approximately 25 to 50 feet. Noise impacts from the railroad are not expected to increase significantly because there are no at-grade crossings contained within the shoo-fly and, therefore, no need for trains to sound their whistles nor severely accelerate or decelerate within the shoo-fly area.

The construction of the platform bridges for the depressed SPUI ramps would require traffic restrictions on US 60. Closures would be limited to a single direction at one time, and traffic would be diverted to the opposing roadway using appropriate traffic control. Following construction of the platform bridges, US 60 would likely be completely closed for approximately 1 day to allow for post-tensioning the structures.

Several alternatives to the above-described SR 303L/US 60 service traffic interchange configuration were considered. A partial cloverleaf design was rejected because of unacceptable LOS of the US 60 intersection, the undesirable loop off ramp, and the need for long ramps for acceleration and deceleration. In addition, such a configuration would increase noise impacts to adjacent neighborhoods and would require steep grades for ramps. A platform diamond design would have poor sight distances, would create moderate impacts on noise levels, and would need the greatest amount of BNSF R/W. A semidirectional design would need the greatest amount of R/W and would have highly visible elevated flyover ramps that would create visual and noise level impacts.

System Traffic Interchanges

System traffic interchanges would be constructed at I-10 and at the proposed Northern Parkway.

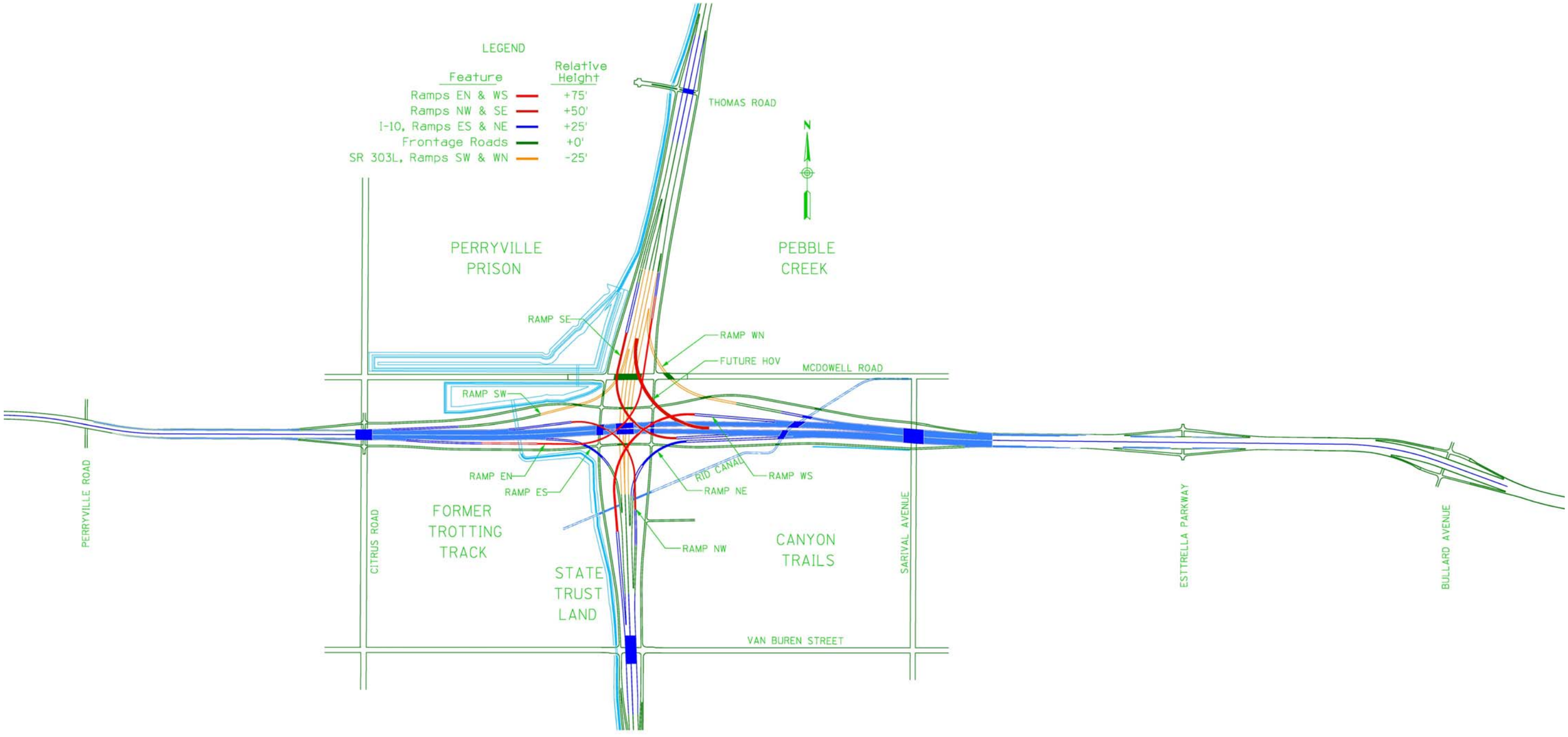
The recommended configuration for the SR 303L/I-10 system interchange is a five-level directional interchange (Figure 3-3, on page 47). I-10 would be elevated one level and would be realigned 250 feet to the north to minimize impacts on adjacent residential development in the southeast quadrant of the interchange and to accommodate maintenance of traffic on I-10 during reconstruction of I-10. SR 303L would be depressed one level below grade at McDowell Road and at I-10, would rise over the RID Canal to the south of I-10, and would be one level above grade at Van Buren Street.

Half-diamond interchanges would be added on I-10 at Citrus Road, west of the system interchange, and at Sarival Avenue, east of the interchange. These half-diamond interchanges would be connected by two-lane, one-way frontage roads, which would remain at ground level. Local access would be allowed onto and off of these frontage roads using right-in, right-out configurations. This split diamond interchange configuration would replace the existing I-10/Cotton Lane interchange.

Along SR 303L, half-diamond interchanges would be constructed at Van Buren Street and at Thomas Road and would be connected by two-lane, one-way frontage roads, which would remain at grade. These frontage roads would connect with the I-10 frontage roads and with McDowell Road to provide local circulation and access to existing and future development north and south of I-10.

Directional ramps for southbound-to-westbound and westbound-to-northbound traffic would be depressed one level under McDowell Road and connect into I-10 one level above ground. Ramps for northbound-to-westbound and southbound-to-eastbound traffic would cross over I-10 and be elevated two levels above ground (approximately 50 feet) at I-10. Ramps for eastbound-to-northbound and westbound-to-southbound traffic would be elevated three levels above ground (approximately 75 feet), crossing over the ramps for northbound-to-westbound and southbound-to-eastbound traffic. Both I-10 and SR 303L would have widened medians to accommodate future HOV connectors for the southbound-to-eastbound and westbound-to-northbound traffic movements. The HOV ramp would be elevated one level over McDowell Road and two levels over I-10. Directional ramps between SR 303L and I-10 would require additional width on I-10. The additional width would be reduced to match the ultimate I-10 roadway width at Perryville Road on the west and Bullard Avenue on the east.

Figure 3-3. SR 303L/I-10 system traffic interchange (Preferred Alternative)



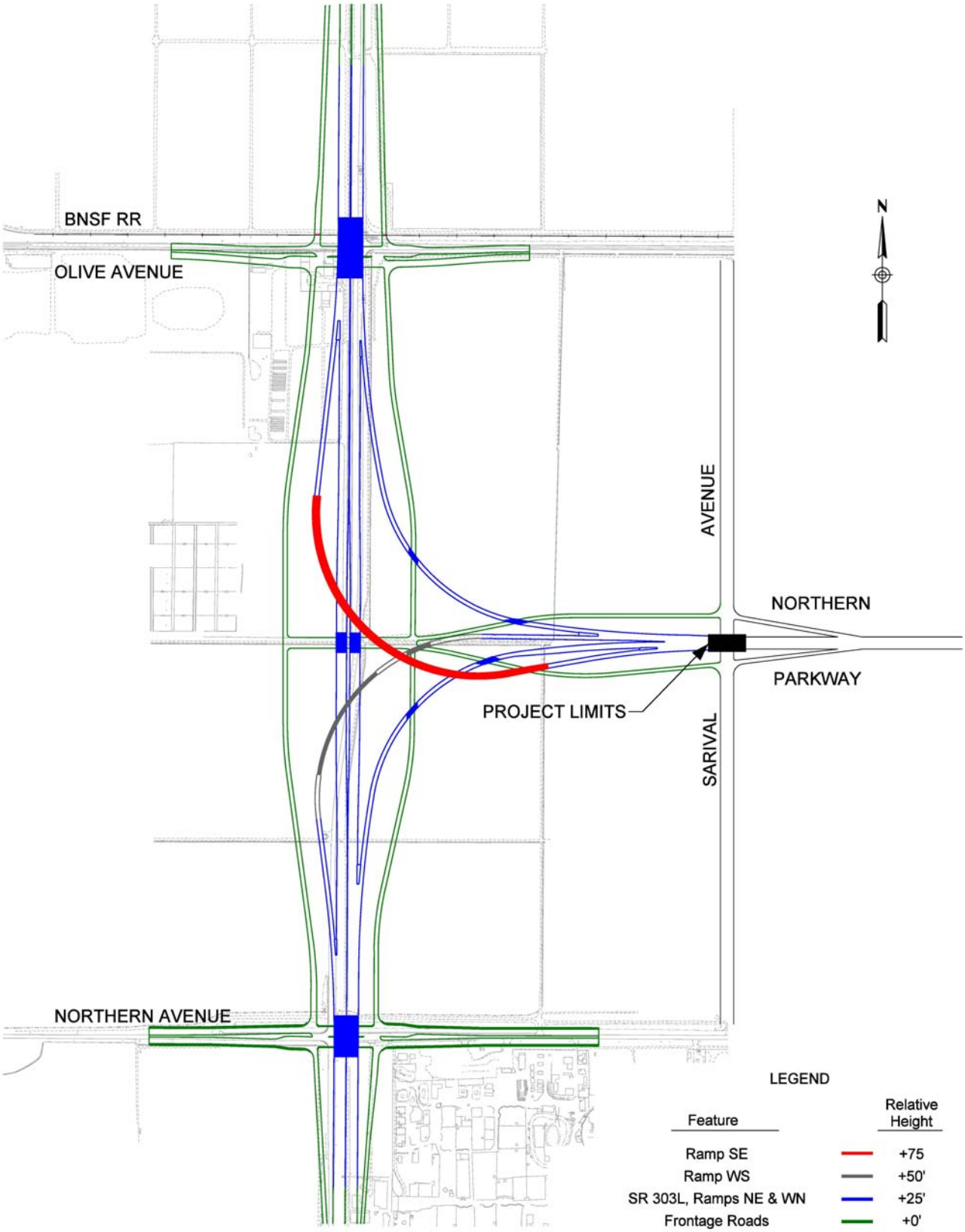
The proposed Northern Parkway, expected to be a major thoroughfare serving the West Valley, is projected to carry over 80,000 vpd. Therefore, the preferred SR 303L and Northern Parkway interchange would have to handle heavy traffic to and from this parkway. According to analyses accompanying the DCR for SR 303L, I-10 to US 60, a T-shaped system traffic interchange with frontage roads would be constructed at the proposed Northern Parkway (Figure 3-4, on page 50). This three-level traffic interchange would have fully directional ramps to support all traffic movement at the Northern Parkway mid-mile alignment with SR 303L between Northern and Olive avenues.

A half-diamond interchange would be constructed at Northern Avenue to provide SR 303L access to and from the south. Northbound and southbound one-way frontage roads would extend from Northern Avenue to Peoria Avenue. No ramps would be provided at Olive Avenue because of operational conflicts with the system traffic interchange and ramp crossings of the BNSF tracks. Northern Parkway would approach SR 303L from the east, being elevated over Sarival Avenue. Eastbound and westbound one-way, two-lane frontage roads would extend from the northbound and southbound frontage roads to Sarival Avenue and align with the Northern Parkway's Sarival Avenue ramps to east of Sarival Avenue.

The frontage roads would generally be at-grade. SR 303L and Northern Parkway would be elevated one level aboveground, as would directional ramps for traffic heading north on SR 303L from westbound Northern Parkway and traffic heading east on the parkway from northbound SR 303L. A directional ramp for traffic heading south on SR 303L from westbound Northern Parkway would be elevated two levels above ground. Traffic heading east on the parkway from southbound SR 303L would be elevated three levels aboveground on a directional ramp.

The City of Surprise is considering plans to construct a major north–south arterial street west of SR 303L from Northern Avenue or Olive Avenue to Bell Road. Extension of the proposed Northern Parkway westward to link into this new arterial street may have merit. If the proposed Northern Parkway were to be extended west of SR 303L, the T-shaped system traffic interchange would need modification; this issue would be addressed during a subsequent design stage. In the interim, such connectivity would be provided by the east–west frontage roads discussed above. Preliminary configurations of the interchange have been designed to allow for future expansion to the west through the frontage road connections, and final designs would allow for this connection with little or no reconstruction of the system interchange required.

Figure 3-4. SR 303L/Northern Parkway system traffic interchange (Preferred Alternative)



Right-of-way

This section describes the existing and proposed R/W along the SR 303L corridor. Additional discussion of R/W needs is contained in the *Economic Conditions* and *Utilities* sections of Part 4, beginning on pages 157 and 175, respectively.

Description of Existing Right-of-way

ADOT previously purchased, or received by dedication, a portion of the R/W for the SR 303L corridor in the early 1990s. MCDOT has purchased some additional R/W along the corridor. Some of the ultimate R/W for the freeway exists from McDowell Road north to US 60. The R/W is generally 300 feet wide and widens to 600 feet or more at the future service traffic interchange locations.

Most of the SR 303L R/W was dedicated to ADOT by the adjacent property owners in exchange for construction of the interim roadway in 1992 and a commitment to begin construction of a freeway by 2005. The dedicated parcels contain a reversion clause stating that any portion of the dedicated R/W not used by ADOT for the interim roadway will be returned to the grantor "if ADOT
(a) should abandon its plan to construct the SR 303L Freeway before December 31, 2005, or
(b) should fail to commence construction of the SR 303L Freeway by December 31, 2005." The reversion clause was determined to be valid and the reversion terms were met. The amount of land that will revert to the original owner is under debate at this time.

Summary of Proposed Right-of-way and Easement Requirements

The existing R/W is not sufficient to accommodate the entire ultimate freeway and off-site drainage system that would be needed for the proposed project. The typical cross section is wider than envisioned in 1990 and the drainage system is much wider. As a result, additional R/W would be needed along most of the corridor south of Greenway Road.

Significant amounts of R/W would be needed to accommodate the traffic interchanges at I-10, Northern Parkway, and US 60. Additional R/W would be required adjacent to US 60 because of "land-locked" properties that would no longer have safe access from the adjacent roadways. In the southern quadrant of the proposed interchange at US 60, the vacant land is owned by Grand Avenue and Estrella Freeway Property LP. The land situated in the western quadrant of the proposed US 60 interchange has a number of landowners, including ASLD. Two businesses operate from part of this area: A Adobe RV & Mini Storage and Sav-on-Fence, a small fencing contractor.

At Northern Parkway, additional R/W is required to construct the frontage roads between Northern and Olive avenues and the ramps connecting into the proposed "super street."

Between Northern Avenue and Camelback Road, Adaman Irrigation and Water Delivery District has a 45-foot-wide R/W adjacent to the existing SR 303L R/W for its distribution pipes. The distribution pipes would have to be relocated to the east side of the future SR 303L R/W and replacement R/W provided for the district.

Substantial R/W would be required at the I-10 and SR 303L interchange. The additional R/W would allow for the construction of the directional ramps and one-way frontage roads that would run parallel on either side of I-10 and SR 303L and for the realignment of I-10 to accommodate the interchange without infringing on existing neighborhoods south of I-10. Additional R/W would also be needed to accommodate the proposed widening of I-10 between Perryville Road and Bullard Avenue. R/W needs have increased from those outlined in the 2002 initial DCR because the plans now include the off-site drainage basins and channels as defined through the *Loop 303 Corridor/White Tanks Area Drainage Master Plan Update* being prepared for FCDMC. This off-site drainage system is based on FCDMC regional drainage requirements instead of ADOT criteria so that it is larger and requires more R/W. In addition, the proposed R/W is now based on the ultimate section for the freeway of four lanes in each direction plus an HOV lane and auxiliary lanes between interchanges.

The R/W needed along the SR 303L corridor is shown in Figures 3-5 and 3-6, on pages 53 and 54, respectively. Figure 3-7, on page 55, shows the R/W needed at the SR 303L/I-10 system traffic interchange. Figure 3-8, on page 57, shows the R/W required at the SR 303L/Northern Parkway system traffic interchange. Figure 3-9, on page 59, shows the R/W needed at the SR 303L/US 60 service traffic interchange.

The parcels that have not been dedicated that are located inside the proposed R/W boundary would need to be acquired or dedicated. A R/W acquisition program would be implemented by ADOT's Right-of-Way Group in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646), the Uniform Relocation Act Amendments of 1987 (Public Law 100-17), and Title VI of the Civil Rights Act of 1964. Private property owners would be compensated at fair market value for land to be acquired for project R/W.

Figure 3-5. Proposed new right-of-way along SR 303L corridor (southern half)

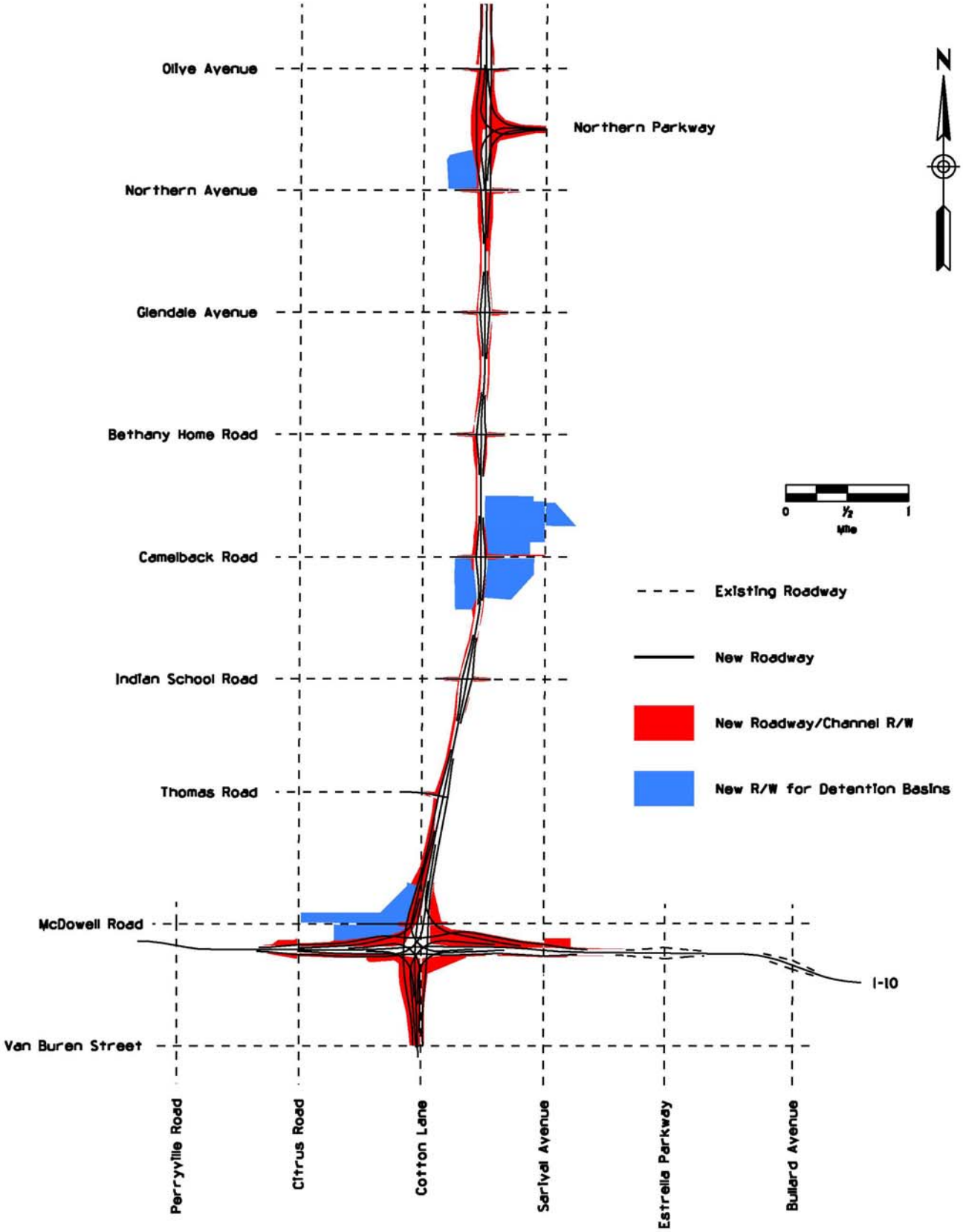


Figure 3-6. Proposed new right-of-way along SR 303L corridor (northern half)

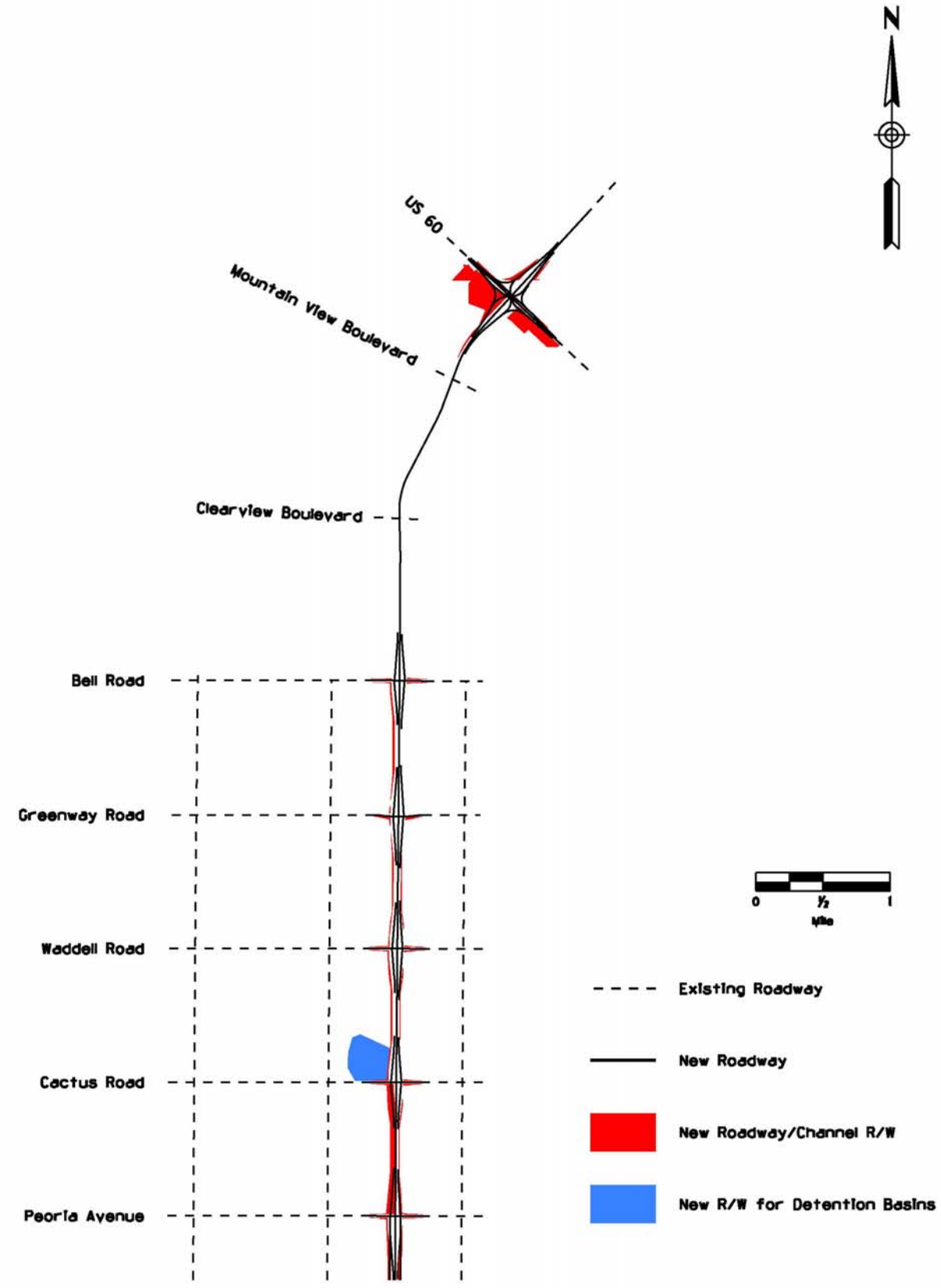


Figure 3-7. Proposed new right-of-way at SR 303L/I-10 system traffic interchange

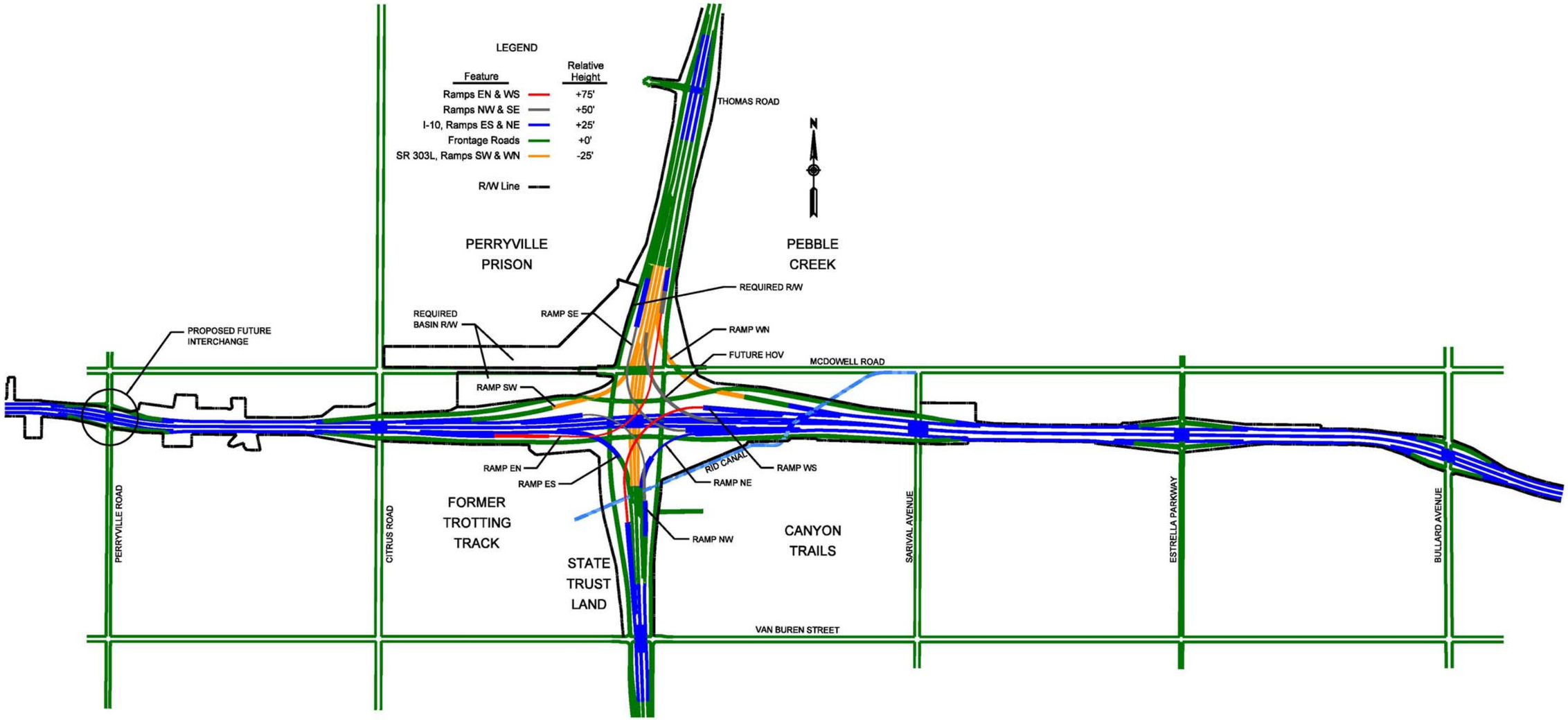


Figure 3-8. Proposed new right-of-way at SR 303L/Northern Parkway system traffic interchange

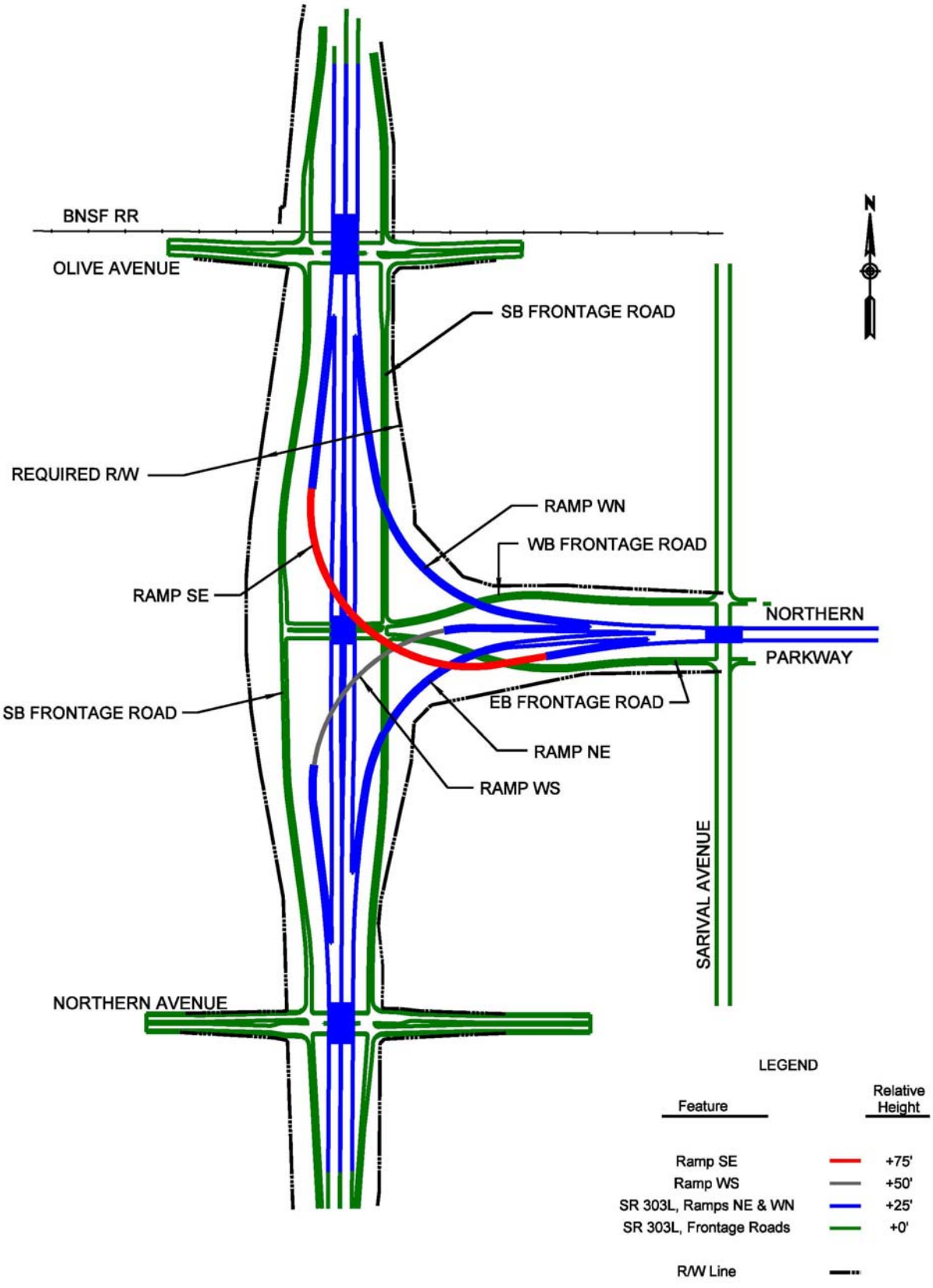


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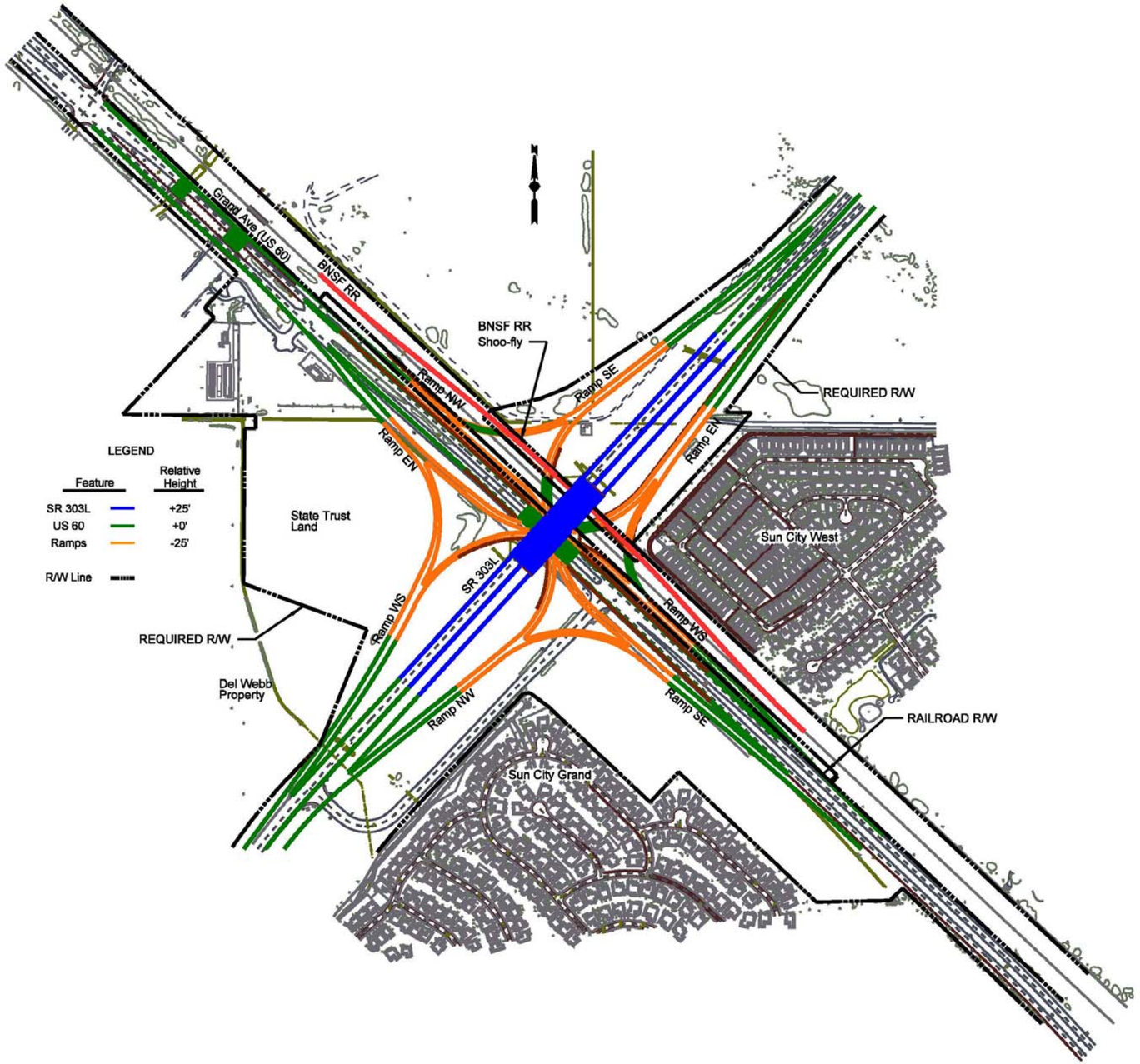
Figure 3-9. Proposed new right-of-way at the SR 303L/US 60 service traffic interchange



C. Conclusion

Through the alternative development process, a Preferred Alternative for the SR 303L improvements emerged. It consists of upgrading SR 303L to a freeway facility with an ultimate configuration of ten lanes. Two system traffic interchanges would be built, at the intersection of SR 303L and I-10 and the proposed Northern Parkway. Additionally, 14 service traffic interchanges would be built to connect SR 303L to cross streets. A three-level service traffic interchange in a SPUI configuration would provide an enhanced connection between SR 303L and US 60. The environmental impacts of the Preferred Alternative and the No-Build Alternative are evaluated in Part 4, *Affected Environment and Environmental Consequences*, on page 62.